SMALL ESTABLISHMENTS SERVICES

ANNUAL REPORT - 1978

INPUT

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ANNUAL REPORT

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I INTRODUCTION

I INTRODUCTION

- This report is produced by INPUT as part of the Small Establishment Service (SES). The report covers the selection and use of information processing products and services by small establishments. These products and services include:

  - Computer equipment.
  - Computer services.
  - Office equipment.
  - Communications equipment.
  - Communications services.

- Information is provided on each major industry sector:

  - Discrete Manufacturing
  - Process Manufacturing
  - Transportation
  - Utilities
  - Banking and Finance
  - Insurance
  - Health Services
  - Educational Services

- Wholesale Distribution
- Retail Distribution
- Other Services
- State and Local Government

- This information is presented in more detail through the industry reports on select industry sectors.

- Both independent small establishments and branches of major companies were analyzed and reported upon separately.

- Small establishments were reported upon in the size categories of:

  - 1-19 employees.

  - 20-99 employees.

  - 100-499 employees.

  These categories match the size categories of United States Government Census of Business statistics.

- The report emphasizes use of information processing and communications equipment and services, user needs for additional equipment and services, and user applications.

- A cross-industry section presents a comparison of the twelve industry sectors in order that clients can better formulate sales strategies.

- Inquiries and comments on the information presented in this report are invited from clients.

II EXECUTIVE SUMMARY

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A. KEY CONCLUSIONS

- A total of $31.3 billion was spent in 1977 by small establishments on information processing equipment and services. This consists of:

- Computer equipment	$5.7 billion
- Computer services	$1.7 billion
- Office equipment	$6.6 billion
- Communications equipment	$4.3 billion
- Communications services	$13.0 billion

  These figures are for payment to outside vendors only, and do not include salaries or fringe benefits for EDP, communication, or office employees.

- Small establishments are rapidly increasing their use of information automation equipment. However, the number of employees required to automate is a function of the type of information to be processed and of the industry sector.

- For computer equipment and services in the sectors of utilities, finance and banking, insurance, and business services, firms of 20 employees use automation.

- The use of office automation equipment is lagging behind computer equipment and services. However, in the sectors of business services, and state and local government, establishments of 50 employees are using office automation equipment.

- The great majority of small establishments have immediate needs for additional equipment and services to be used for information processing and communications, although specific needs (and their importance) depend upon the industry sector.

- The users who are already making the most use of information automation equipment and services also have the greatest desire for additional equipment and services.

- Small establishments generally do not plan ahead to obtain information processing equipment and services. Instead, when a need is recognized, they examine a few alternatives and then make a decision based upon a financial analysis, a committee analysis, and possibly a test installation. The senior executive in the establishment is usually involved in the decision.

- Branches of large companies also use a financial analysis, a committee and possibly a test installation to decide upon information processing equipment and services. The senior executive in the branch is usually involved in the decision.

  - The branch has considerable say, even total say, in the selection of equipment and services.

- Major driving forces for the increased use of equipment and services in small establishments are:

- The decreased cost and improved performance of information processing equipment which makes it acceptable to increasingly smaller users.

- The increased interest by vendors in the small establishment market.

- Annual expenditures per employee for information processing equipment and services vary quite widely as a function of industry sector. The extremes are:

	Computer Equipment and Services	Office Equipment	Communications Equipment & Services
- Banking And Finance	$414	$363	$957
- Retail	$105	$92	$244

B. MARKET GROWTH

- The growth of the $31.3 billion small establishment market will be quite rapid due to the introduction of new equipment designed for small establishments and the increased vendor interest in the market. Exhibit II-1 shows that the market will be $76.1 billion by 1983, with growth rates as follows:

- Computer equipment and services	24 percent
- Office automation equipment	17 percent
- Communications equipment	14 percent
- Communications services	9 percent

- This growth varies by business sector and product type, as shown in Exhibit II-2. In general, an industry sector does not tend to be a high or low growth sector for all products and services. The sectors with the fastest overall growth are discrete and process manufacturing, insurance, finance and banking, and "other services."

- Another way to look at the growth of the small establishment market is to see which percentage of respondents, by industry sector, have immediate needs for which they would spend money for improved equipment and services:

  - Exhibit II-3 shows that in six industry sectors over one-half of all respondents had immediate needs for additional EDP equipment/services and that all sectors require additional EDP equipment/services.

  - The immediate needs for additional office automation equipment are shown in Exhibit II-4. In this case, discrete and process manufacturing, insurance, and "other services" have significant needs for additional office automation equipment. However, four sectors (utilities, wholesale, retail, and education) have little interest. This disparity in the case of retail is due to the relative newness of office automation. The other sectors are relatively well penetrated at the large end of the scale, but the smaller establishments have not considered office automation.

  - Needs for additional communications equipment and services, as shown in Exhibit II-5, are more uniform than office automation. All sectors said they had needs. Just as with office automation equipment, the sectors with the greatest needs are manufacturing, insurance, and "other services."

- Respondents' needs for additional equipment and services are a primary and traditional measure of industry sector "willingness to buy." This information combined with the number of employees in each industry sector can provide a measure of potential sales. In each industry sector, therefore, the percentage

of immediate needs for equipment and services was multiplied by the number of employees to arrive at a new measure called "factored needs for equipment and services."

- For computer equipment and computer services the key industry sectors are retail, "other services," manufacturing, and wholesale (see Exhibit II-6). The very large size of the retail and "other services" sectors makes them more important than when only their percentage of immediate needs are considered.

- Exhibit II-7 shows the factored needs for office automation equipment. Discrete manufacturing, process manufacturing, and "other services" are significantly stronger sectors than all of the others due to their size and interest in office automation.

- Factored needs for communications equipment and services (see Exhibit II-8) are similar to office automation equipment with the exception of the addition of the retail sector. Again larger sectors become more important.

C. DEMOGRAPHICS

- Over 99 percent of all United States establishments have less than 500 employees.

- There are 3,200,000 small establishments in the United States covered by this report, including the sectors of discrete and process manufacturing, transportation, utilities, wholesale, retail, banking and finance, insurance, health services, education, other services, and state and local government. This is almost 80 percent of all United States establishments. They consist of:

-	0-19 employees	2,750,000 establishments
-	20-99 employees	375,000 establishments
-	100-499 employees	75,000 establishments

- Seventy percent of all employees in the United States work in small establishments. The employees are divided by establishment size in the following manner:

-	0-19 employees	21% of all U. S. employees
-	20-99 employees	25% of all U. S. employees
-	100-499 employees	24% of all U. S. employees

- Small establishments are mostly independent enterprises. However, the Fortune 500/50 companies (with an average of 220 branches each) contain 165,000 branches, which are a significant market by themselves.

D. THE AUTOMATION LINE AND MARKET TRENDS

- Exhibit II-9 shows the 70% "automation line" for computer equipment and services. This line corresponds to the point at which 70 percent of the establishments are automated. The very promising sectors of discrete manufacturing, process manufacturing, and retail, are not very automated and thus the opportunities in these sectors will increase with time.

- A penetration of 25 percent is used as the definition for the office "automation line," rather than the 70 percent used for EDP, because office automation is in a newer market phase. Exhibit II-10 shows that the greatest use of office automation occurred in "paperwork" industries of insurance, education, utilities, "other services," and state and local government.

- There is no correlation between the use of communications equipment and services not provided by local telephone operating companies and the size of establishments. Thus, an "automation line" for this area is not drawn. However, the industry sectors which make the most extensive use of interconnect equipment and communications services (other than direct dialing) are manufacturing, wholesale, and "other services."

E. RECOMMENDATIONS

- Vendors of all equipment and services should sell to small establishments because the markets they represent are large, fast growing, and open to competition.

- It is important to develop a market position as soon as possible since major vendors in each market are actively pursuing the small establishments.

- Branches of large corporations should be directly approached for sales of equipment and services because they are almost always involved in the selection process. Many times the branch will have the total say in what is obtained.

    - At the time the branch is approached, the vendor should determine if corporate headquarters is involved. If so, the sales effort should proceed in parallel at the branch as well as at corporate headquarters.

- For industry specialized products (such as turnkey computer systems and computer services), sell to the functional and industry specialty of the branch, not the parent corporation.

- Approach users who already are using information automation equipment and services. They are excellent candidates for additional equipment and services.

- Ensure that equipment and services can be expanded to multi-function applications as the need for these applications expands. Develop multi-function equipment for entry into the market.

- Computer equipment and computer services vendors should have the applications programs for the industry sectors which they target. If they are developing new programs, then the key sectors to approach (by size and immediate EDP needs) are:

  - Discrete manufacturing.

  - Process manufacturing.

  - Wholesale distribution.

  - Retail distribution.

  - "Other services."

- Computer equipment and services vendors should approach establishments down to 50 employees in size. Both independent enterprises and branches of large companies should be approached.

- Office automation equipment should be sold to larger establishments and in some cases different industry sectors than are targeted for computer equipment and services. Office automation vendors should concentrate upon the "paperwork industries" which are finance and banking, insurance, and "other services," as well as the key sectors of discrete and process manufacturing:

  - Both branches of large companies and independent enterprises should be approached for office automation equipment.

  - Establishments of 100 employees or more should be targeted.

- Unlike computer equipment and services and office automation equipment, the sale of communications interconnect equipment and communications services other than direct dial is not a function of establishment size:

  - The key industry sectors to target for communications equipment and services are discrete manufacturing, process manufacturing, retail, and "other services."

  - Sell computer equipment and services both to branches of major corporations and independent enterprises.

EXHIBIT II-1

MARKET SIZE AND GROWTH, 1977/1983

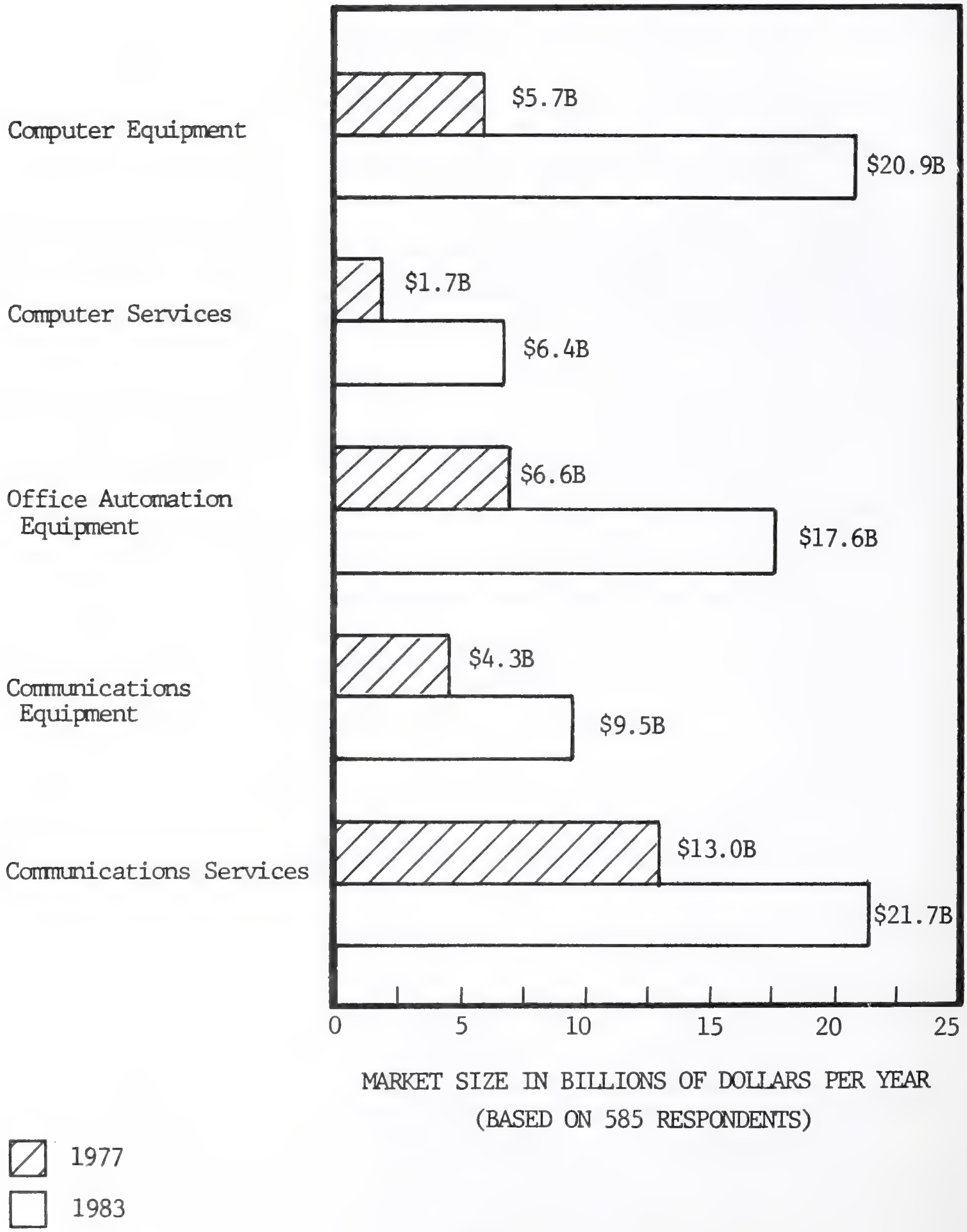


EXHIBIT II-2

RATE OF MARKET GROWTH BY INDUSTRY SECTOR

INDUSTRY SECTOR	COMPUTER EQUIPMENT AND SERVICES	OFFICE AUTOMATION EQUIPMENT	COMMUNICATION EQUIPMENT AND SERVICES
Discrete Manufacturing	H	H	M
Process Manufacturing	H	H	M
Transportation	M	M	M
Utilities	H	L	L
Wholesale	H	L	M
Retail	M	L	M
Finance and Banking	H	M	M
Insurance	H	H	M
Health Services	M	M	L
Education	M	L	L
Other Services	M	H	M
State & Local Government	M	M	L

GROWTH PERCENTAGE EQUIVALENTS			
	High	Medium	Low
EDP Equipment and Services	30%	20%	10%
Office Automation and Communications Equipment	25%	15%	10%
Communications Services	15%	10%	7%

EXHIBIT II-3

IMMEDIATE NEEDS FOR COMPUTER EQUIPMENT/SERVICES

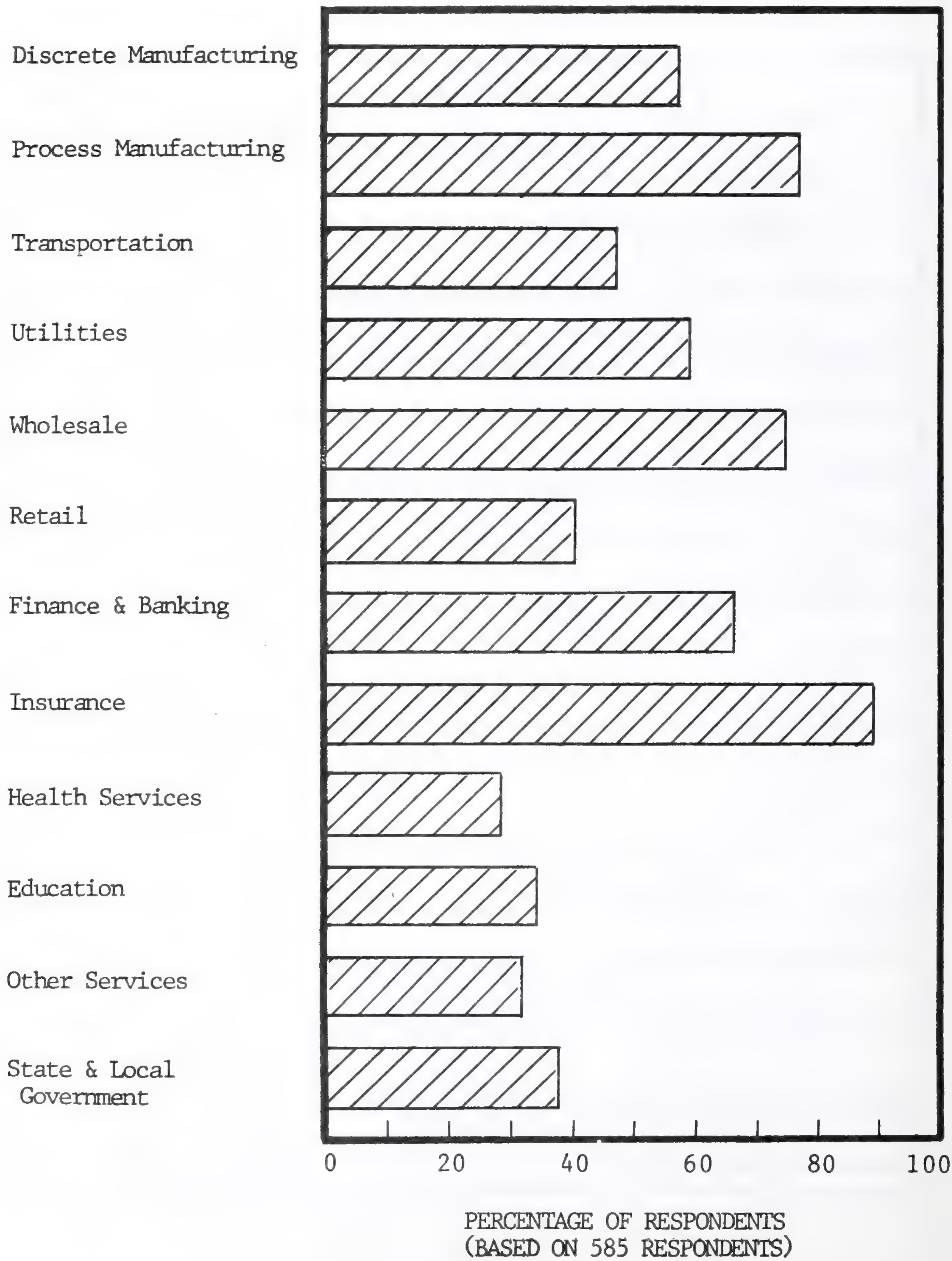


EXHIBIT II-4

IMMEDIATE NEEDS FOR OFFICE AUTOMATION EQUIPMENT

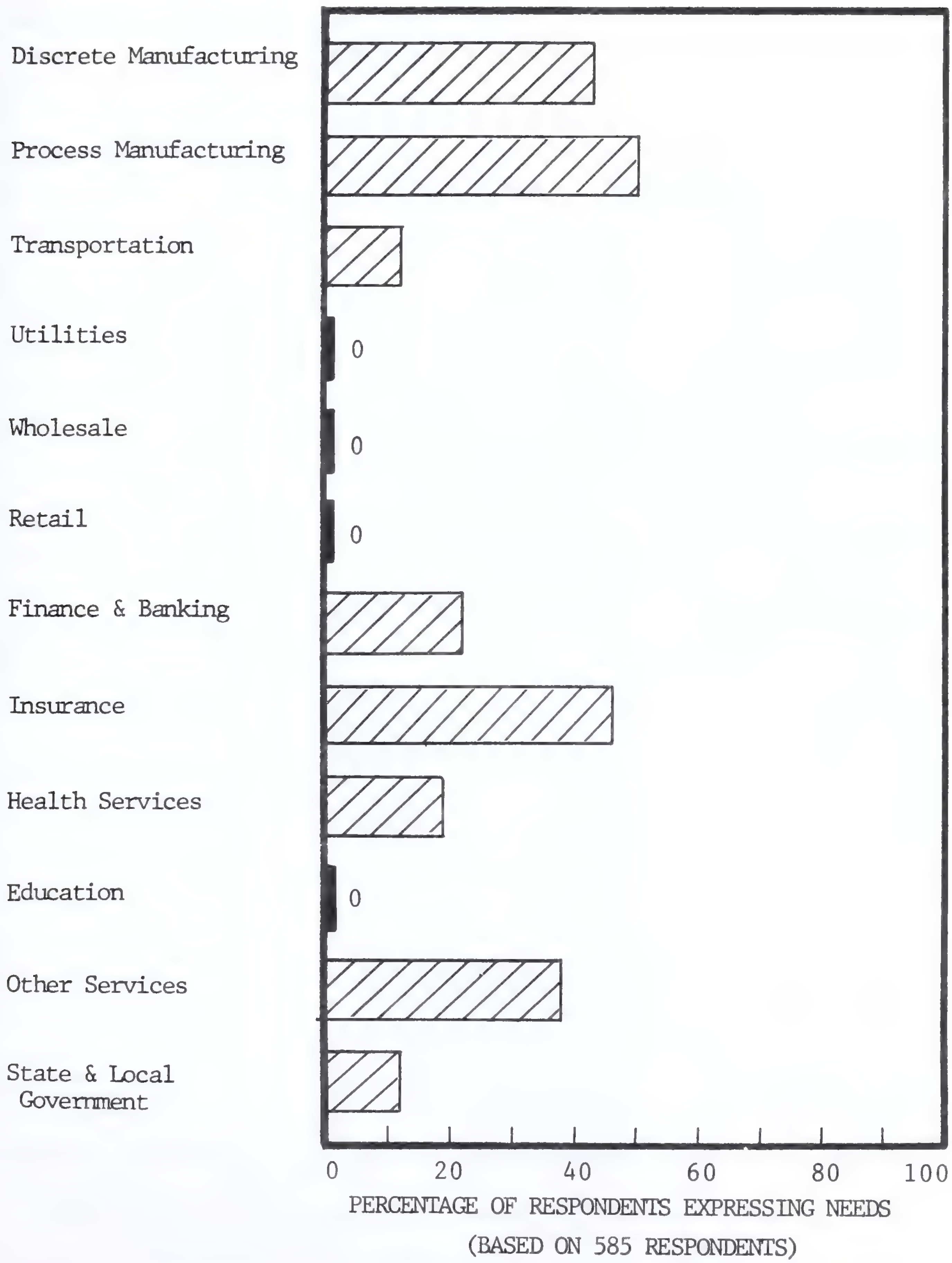


EXHIBIT II-5

IMMEDIATE NEEDS FOR NEW COMMUNICATIONS EQUIPMENT AND SERVICES

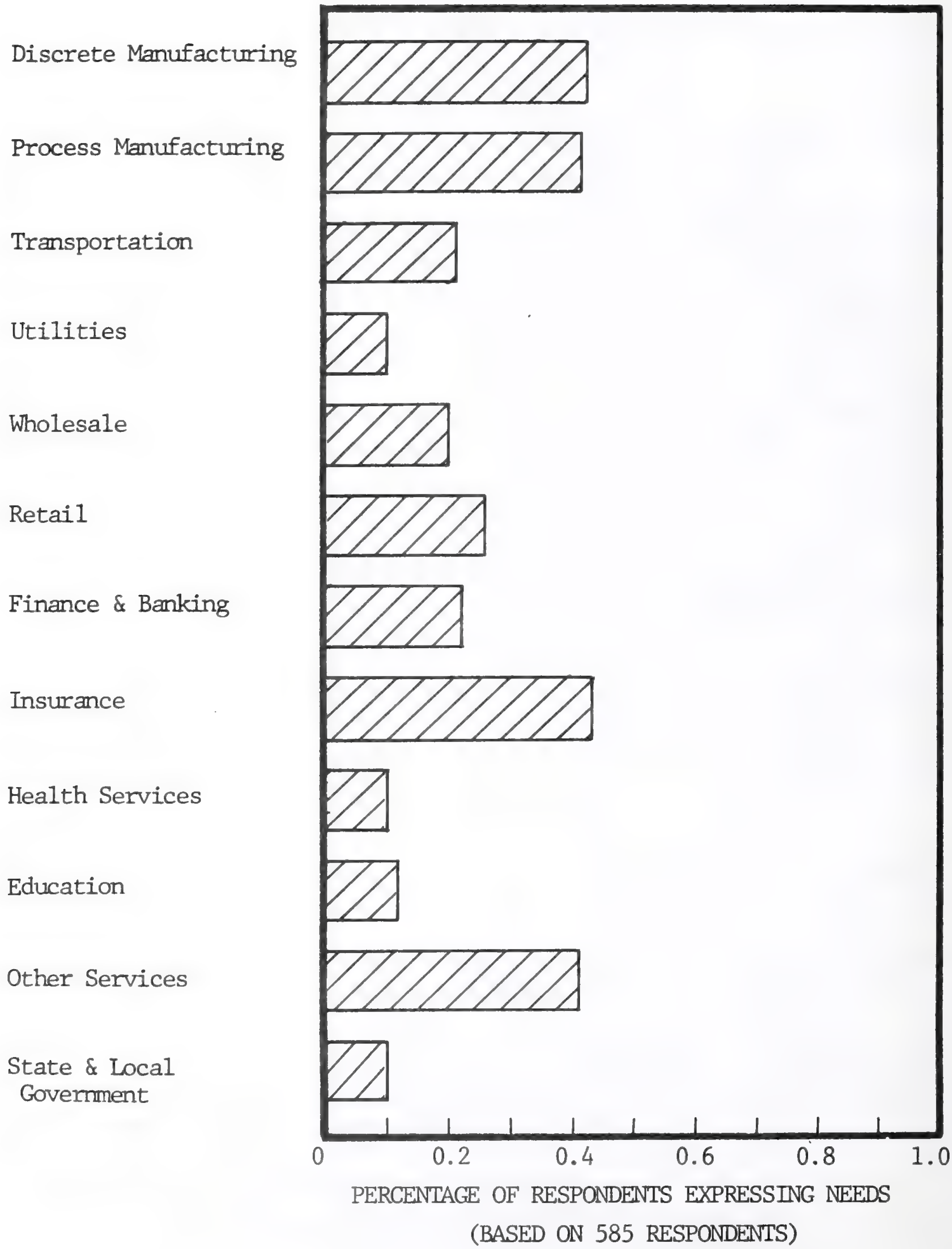


EXHIBIT II-6

FACTORED NEEDS FOR COMPUTER EQUIPMENT/SERVICES

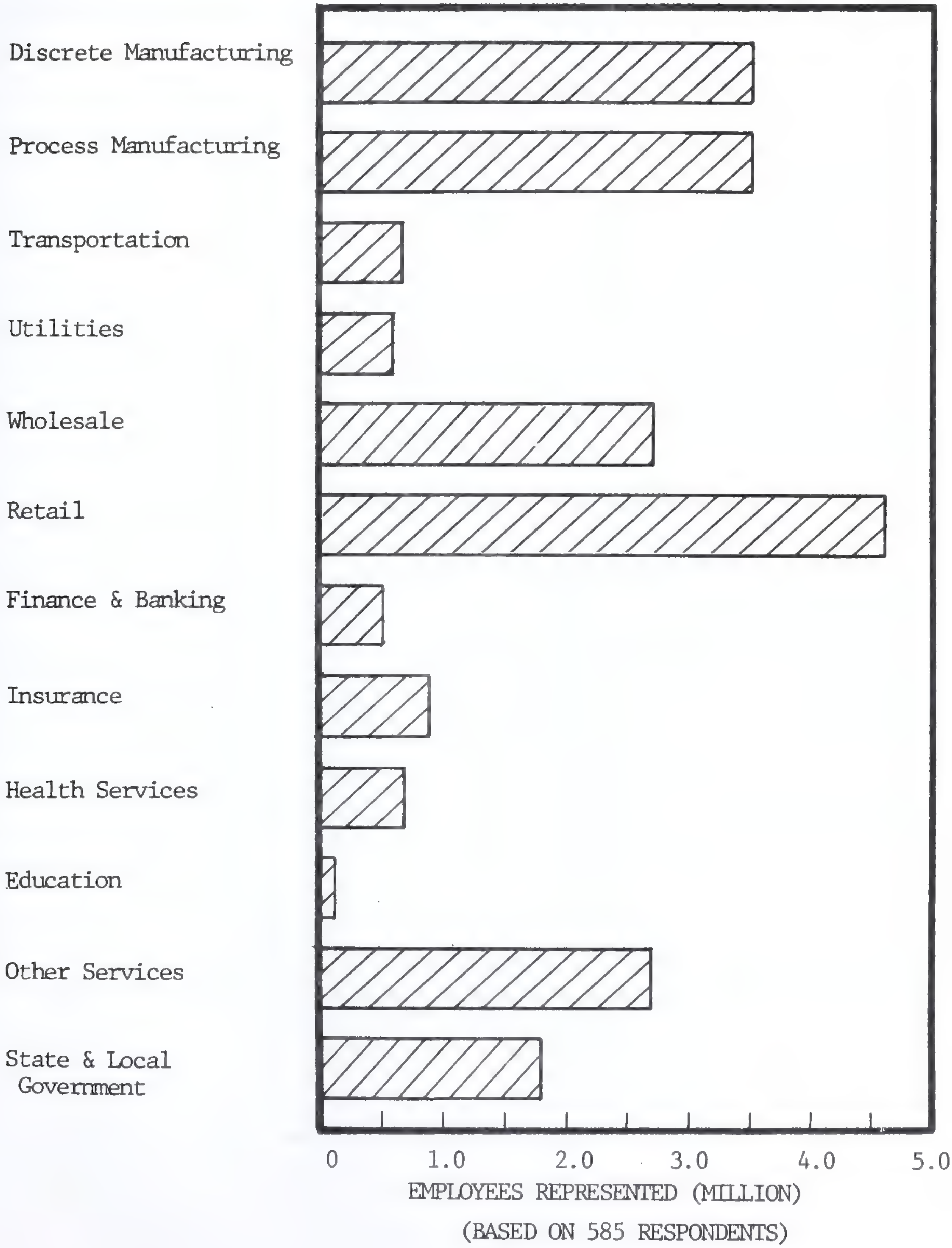


EXHIBIT II-7

FACTORED NEEDS FOR OFFICE AUTOMATION

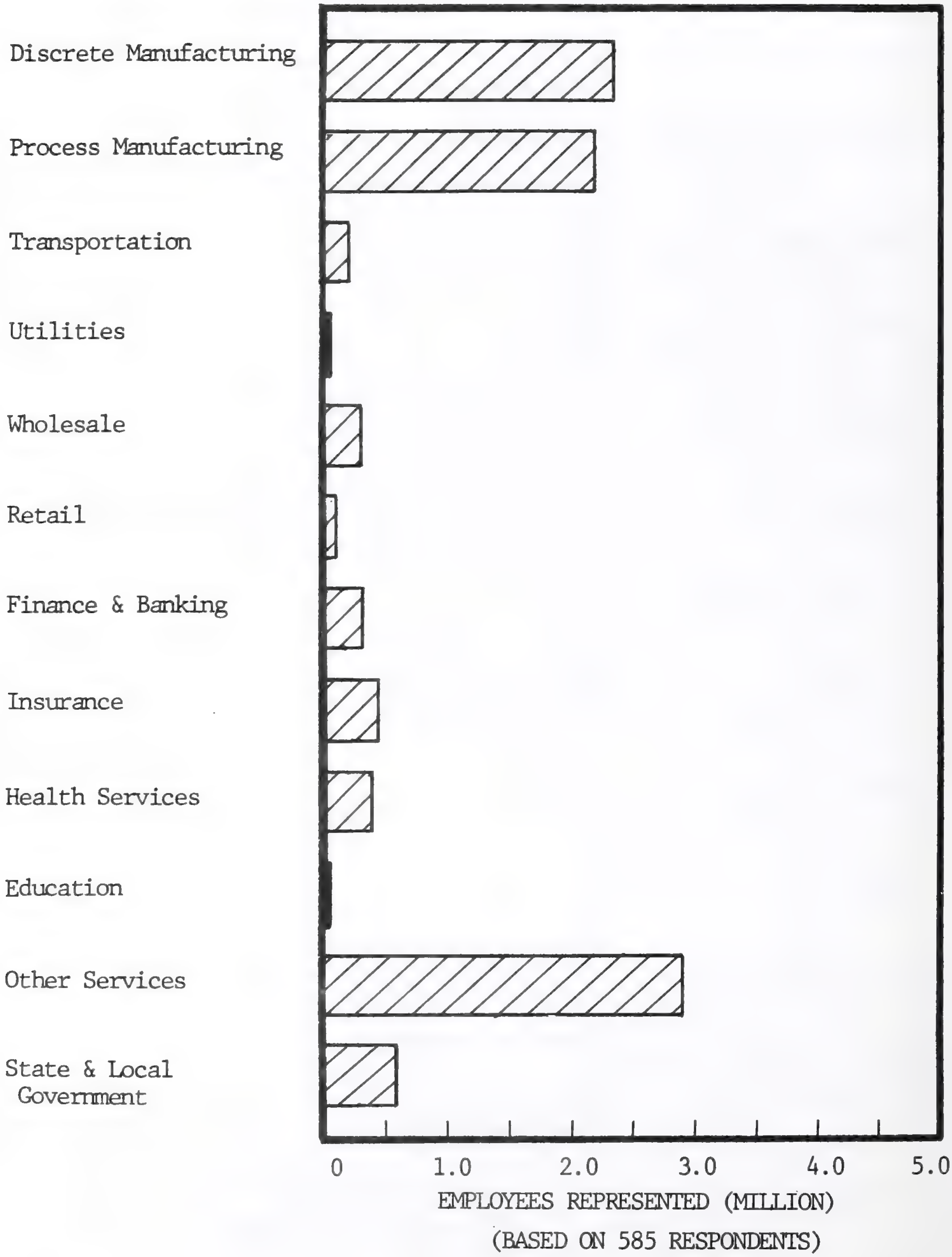


EXHIBIT II-8

FACTORED NEEDS FOR COMMUNICATIONS EQUIPMENT/SERVICES

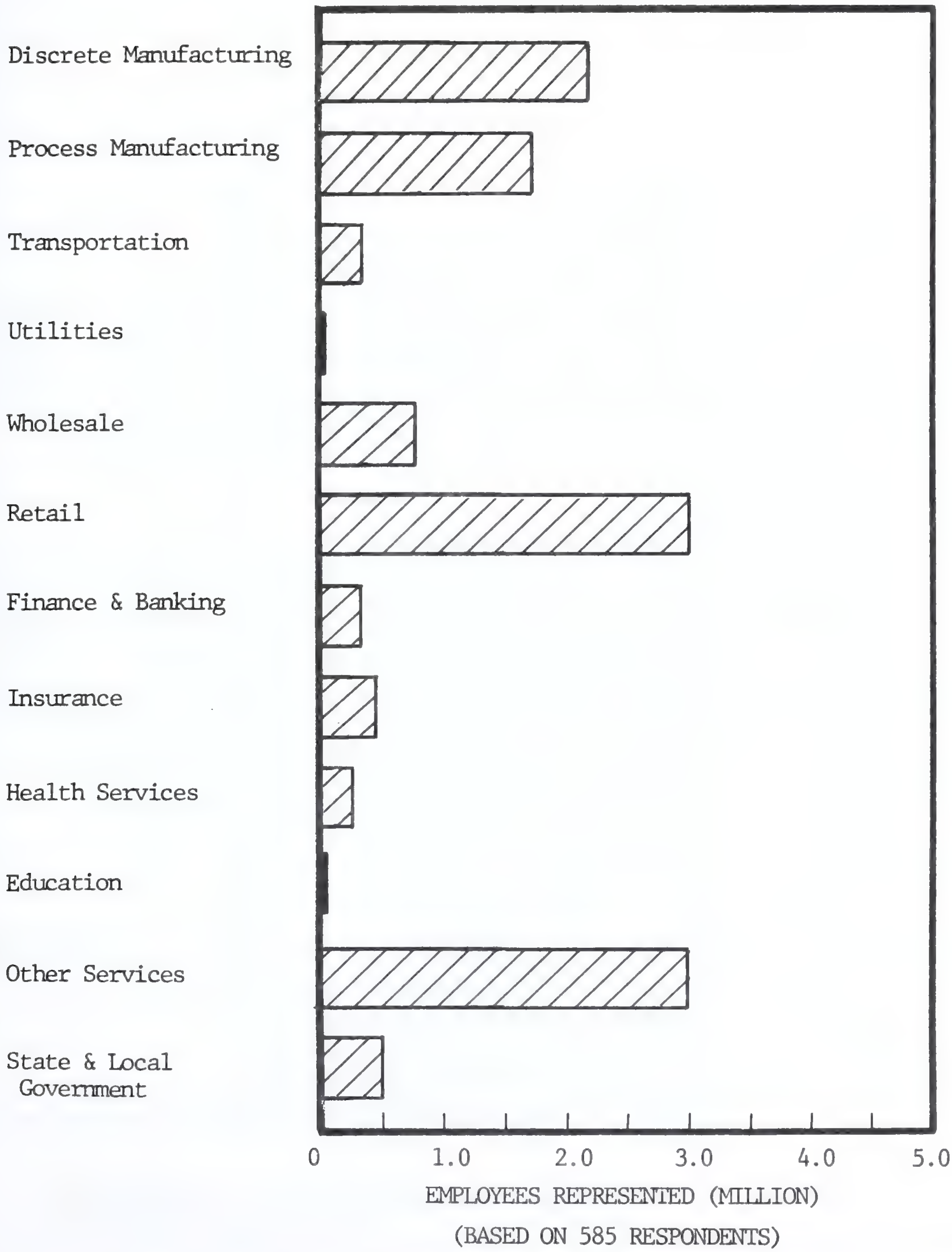


EXHIBIT II-9

THE AUTOMATION LINE FOR COMPUTER EQUIPMENT/SERVICES
(70% PENETRATION OF USERS)

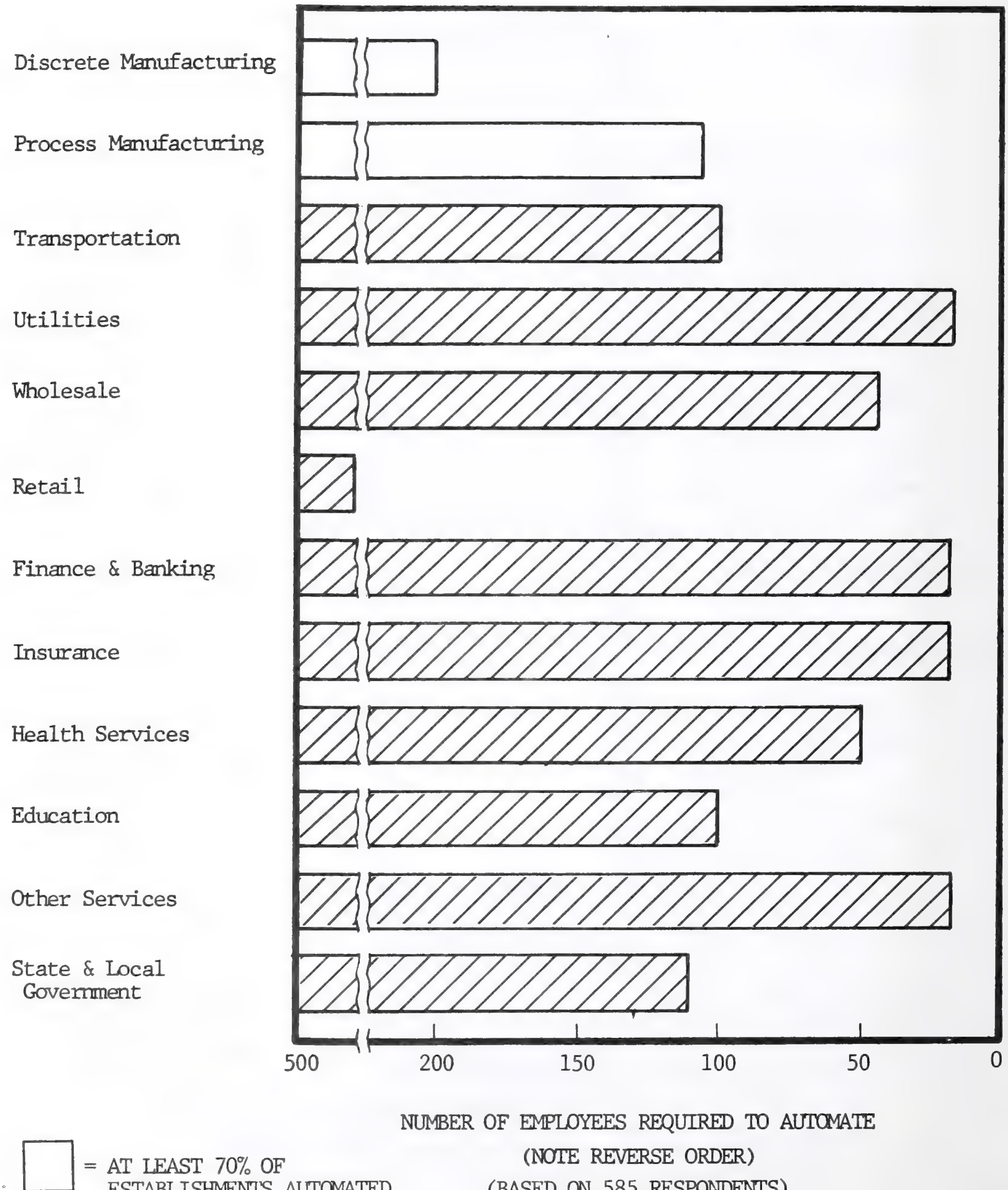
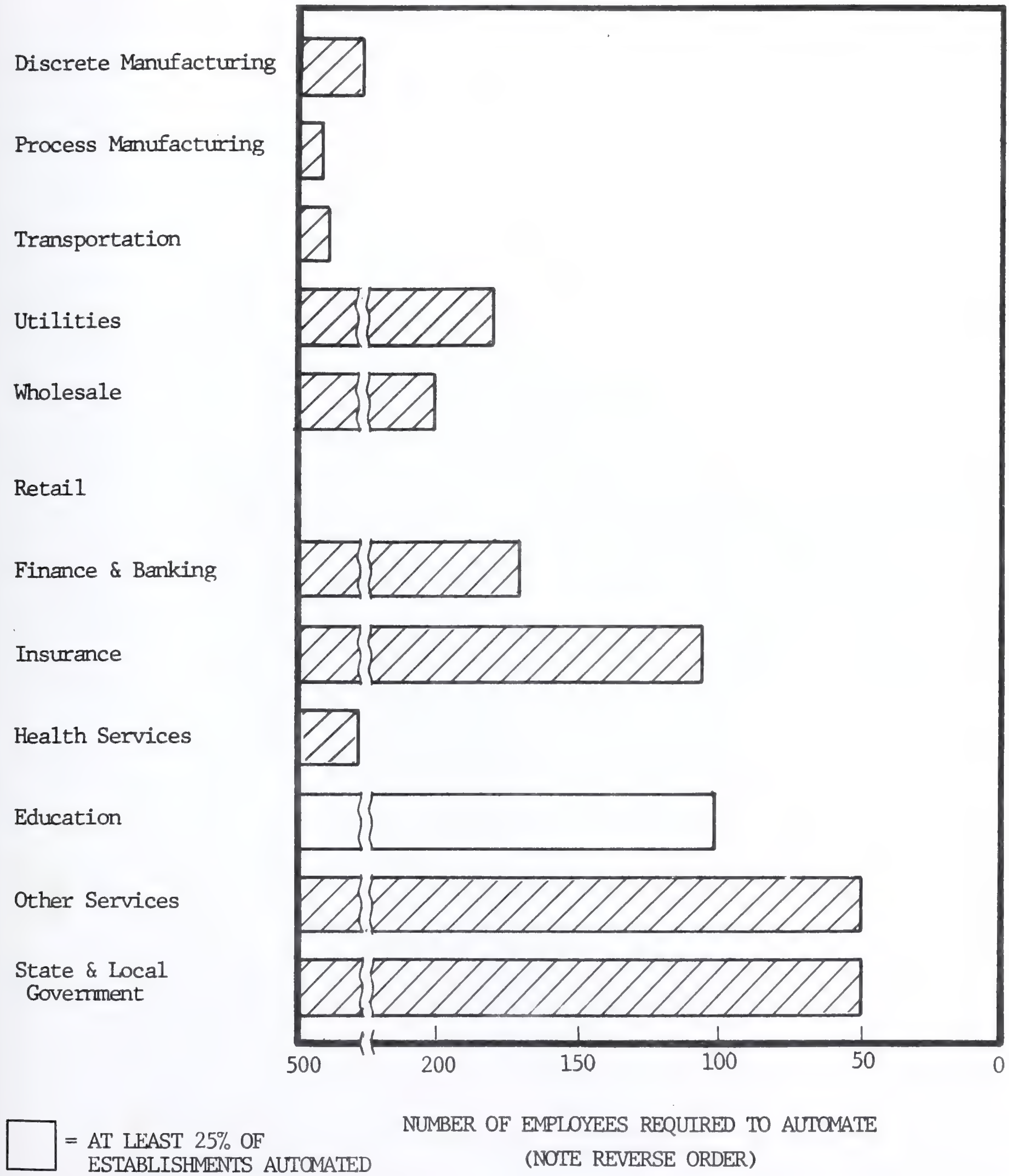


EXHIBIT II-10

THE AUTOMATION LINE FOR OFFICE AUTOMATION EQUIPMENT
(25% PENETRATION OF USERS)



III CROSS-INDUSTRY ANALYSIS

III CROSS-INDUSTRY ANALYSIS

A. CHARACTERISTICS OF THE MARKET

- By any measure, small establishments are a substantial market for EDP, office, and communications equipment, services, and supplies.

- Small establishments included in this report comprise about 80 percent of all establishments in the United States. There are more than 3.2 million establishments covered in this report that have 1-499 employees, of which the overwhelming majority are in the retail and "other services" sectors (see Exhibit III-1).

  - Almost 1.1 million retail establishments have fewer than 500 employees.

  - More than 830,000 establishments in the "other services" sector have fewer than 500 employees.

- Small establishments employ 70 percent of the total United States workforce, or 49 million people. This total includes four million employed in sectors not specifically analyzed by this report (see Exhibit III-2).

  - Retail and "other services" account for almost nineteen million employees.

- Discrete and process manufacturing plus state and local government employ an additional 14 million people.

- Small establishments currently spend $31.3 billion annually on EDP, office, and communications equipment, services, and supplies. This figure does not include any expenditures for personnel, which for this size establishment may run from one-and-one-half to two times the expenditure for equipment and services.

B. IMMEDIATE NEEDS FOR COMPUTER EQUIPMENT AND SERVICES

- The larger and more sophisticated the "under-500-employee" establishment is, normally the more likely it is to know and express what its future needs will be.

- Many firms in this size range do not go through a formal five-year or even one-year planning process, and are only aware of their needs in general terms. Similarly there is often no formal search for a solution to these needs. Instead, the solution depends on the arrival of a well-informed salesman who can relate a general need to a specific product or service. Consequently the percentage of needs expressed by the various segments of the market is an important guide to market planning.

- For almost all industry sectors, the 100-499 employee group of establishments stated more needs for computer equipment and services than did the 20-99 employee group, which in turn stated more needs than the 1-19 employee group (see Exhibits III-3, 4, 5).

  - The larger firms normally handle a greater number of business transactions, have more widespread geographic territories to cover, and display more sophisticated management of resources - hence a higher awareness of need.

- Exceptions to this general pattern are those industries in which the 20-99 employee firms are just reaching the automation line, and consequently express more needs than either the larger or smaller employee groups.

- The state and local government sector reverses the normal pattern, so that medium size establishments expressed more needs than the 100-499 employee group, and small establishments (1-19 employees) expressed more than twice as many needs as the larger size group.

- When the percentage of establishments expressing immediate needs is compared to the percentage of establishments already using computer equipment or services, it is apparent that the establishments that are already penetrated are a major driving force in further sales growth of equipment and services.

  - Effort spent to educate the smaller establishments and persuade them to enter the ranks of automation should have a multiplier effect on sales of all kinds of automation equipment.

- Highest levels of need across all size groups of establishment were expressed by:

  - Insurance.

  - Wholesale.

  - Finance and banking.

  - Process manufacturing firms.

- Medium levels of need were expressed by respondents in:

  - Utilities.

- Discrete manufacturing.
- State and local government.
- Retail.

- Moderate to low levels of need were expressed by:
  - "Other services."
  - Health services.
  - Educational services.
  - Transportation.

- Note that these levels of expressed need do not reflect the magnitude of potential benefits to the respondents as much as they reflect the relative awareness level of users and their existing familiarity with benefits that computerization can bring to their business.

- This attitude is corroborated by the frequently repeated comment that direct salesmen are the main information source used by small establishments to solve their information handling problems.

C. IMMEDIATE NEEDS FOR OFFICE AUTOMATION IMPROVEMENTS

- With only slight variations, the same pattern of expressed needs for office automation improvements exists that was seen in needs for computer equipment and services.

- The 100-499 employee group expressed more needs than the 20-99 employee group, which in turn expressed more needs than the 1-19 employee size group.

- The overall level of need expressed for office automation was only one-third to one-half as extensive as the need for computer equipment and services, and showed more variation between sectors (see Exhibits III-6, 7, 8).

- The state and local government sector again reversed the normal pattern, in that the smallest locations showed the greatest expression of need, and vice versa.

- Penetration of office automation (word processing) equipment is uniformly greater for all industry sectors among the larger establishments. But there is not the obvious relationship between penetration and further need that was seen in the case of computer equipment and services.

- Those industry sectors that have a lot of paperwork are the obvious candidates for word processing,and indeed they are the most frequent users of word processing:

  - "Other services" (accounting, legal services).
  - Educational services.
  - State government (but not local government).
  - Finance and banking.
  - Insurance.
  - Utilities.

- Of this group, only "other services" and insurance showed up high in the level of expressed need for further improvement, whereas process and discrete manufacturing (which are not paperwork industries) ranked as high or higher in the percentage of respondents who expressed immediate needs in the office automation area.

  - Process and discrete manufacturing should be targeted for increased marketing efforts in all sizes of establishment, starting with the over 100 employee group and concentrating on the branch establishments which are almost entirely unpenetrated.

- Other selected marketing targets, based on levels of need that are higher than current levels of penetration are:

  - Health services, especially 20-99 employees.

  - Wholesale, especially branches with 100-499 employees.

  - The smallest locations of state government, discrete manufacturing, and process manufacturing.

- Some size groups in some industry sectors expressed no need for further improvements in office automation, even though they are already sizable users of this type of equipment. This suggests either that the segment is already saturated or that a different strategy is required, such as upgrading to multi-function equipment. These segments are:

  - Utilities, all establishment sizes.

  - Educational services, all establishment sizes.

  - State government, over 100 employees only.

- A few industry segments expressed very little familiarity with word processing, indicating strong efforts at education are required, and/or that multifunction equipment would be a possible entry point into these markets. These very underpenetrated segments are:

  - Retail establishments of all sizes.

  - Medium and small transportation establishments, especially independents.

  - Medium and small wholesale establishments, especially independents.

  - Local governments, all sizes.

D. IMMEDIATE NEEDS FOR COMMUNICATIONS EQUIPMENT AND SERVICES

- The obvious correlation of expression of communications equipment and services needs with size of establishment again holds true for all industry sectors studied, with minor variations (see Exhibit III-9, 10, 11).

  - The smallest discrete manufacturing, wholesale, retail, and finance and banking establishments stated higher levels of need than the medium sized establishments in these industries.

  - Medium size process manufacturing and utilities establishments had greater needs than their larger counterparts.

- However, there is no correlation of communications needs with the percentage of establishments that have already installed interconnect equipment. In fact, the pattern of use of interconnect equipment is highly variable.

- Nevertheless, respondents were very definite in identifying their communications needs, and most of these needs could be met by the use of interconnect equipment, i.e., the need to move from keyset to PABX, or the need to have better control over long distance costs.

- Industry sectors that rank highest in their expression of communications needs are:

  - Discrete manufacturing.

  - "Other services."

  - Finance and banking.

  - Process manufacturing (medium and larger sized establishments only).

- Industry sectors that expressed average levels of need for communications improvements are:

  - Insurance.

  - Wholesale.

  - Health services (larger sized establishments only).

  - Transportation (medium and larger sized establishments only).

  - Utilities (medium sized establishments only).

- The remaining industry sectors expressed only mild interest in improving their communications facilities. These industries include:

  - Retail trade.

- Educational services.

- State and local government.

E. CURRENT EXPENDITURES FOR COMPUTER, OFFICE, AND COMMUNICATIONS EQUIPMENT AND SERVICES

- The combined rate of expenditure per employee for computer, office, and communications equipment and services varies among the twelve industry sectors by a factor of four-to-one, from $1734 per employee in the finance and banking sector down to $441 per employee in the retail sector (see Exhibit III-12).

- However, because of the size difference in the industry sectors, total expenditures for computer, office, and communications equipment and services vary by a factor of fourteen-to-one, from more than $5 billion in retail and "other services" down in $369 million in educational services.

- The median point in total industry expenditures by small establishments is near $2.5 billion annually.

  - The median industries in total expenditures are the wholesale sector and the finance and banking sector, even though the rate of expenditure per employee for wholesale is near the bottom of the list, while finance and banking ranks highest in rate of expenditure.

- The industries ranking highest in total expenditures, the retail sector and the "other services" sector, both reach that point because of the very large numbers of employees in these sectors.

  - Small establishments of the retail sector are not well advanced in their current use of automation, and offer many market opportunities

especially for computer and communications equipment and services vendors.

- Small establishments of many component industry groups in the "other services" sector are heavily paperwork oriented, and also offer large market opportunities for information processing vendors.

- There is very little correlation, however, between either the rate or amounts spent by the various industry sectors on computer-related items, and the percentage of those amounts spent specifically for outside computer services.

  - Exhibit III-13 shows that the finance and banking sector devotes the highest percentage of its total outside computer-related expenditures (i.e., not including personnel) to computer services, 44.8 percent.

  - The finance and banking percentage is five times as great as the percentage spent by the transportation sector, the lowest of the twelve sectors. The difference in dollars spent will be much greater, since the finance and banking sector spends three times as much as the transportation sector on all of its computer-related costs.

- On the average, 23.5 percent of computer expenditures is spent for computer services, and five industry sectors are within three percentage points of that average. They are:

  - Process manufacturing.

  - Utilities.

  - Wholesale.

  - Retail.

  - State and local government.

F. CURRENT USE OF COMPUTER EQUIPMENT AND/OR COMPUTER SERVICES

- The pattern of greater use of information processing by the larger sized establishments is seen very clearly in Exhibits III-14, 15, 16. However, there is significant use of computer equipment and/or computer services at all establishment sizes.

  - In half of the industry sectors, one hundred percent of respondents in the 100-499 employee size group are using on-site computer equipment, remote computer services, or both.

    - These industry sectors include utilities, wholesale, finance and banking, insurance, education, and "other services".

  - In the 20-99 employee size group, utilities, finance and banking independents, and insurance independents are one hundred percent represented by the use of on-site computer equipment, remote computer services, or both.

  - In the smallest 1-19 employee size group, only utilities and insurance independents are one hundred percent users of on-site computer equipment, remote computer services, or both.

- Where there are differences between branch and independent establishments in the degree of automation, it is almost always the independents who are more automated.

  - The transportation sector is a notable exception to this rule of thumb.

  - The smallest size establishments in process manufacturing, retail, and probably wholesale and state government benefit from the corporate umbrella in that these branches are more frequently automated than their independent counterparts.

- Examination of Exhibits III-17, 18, 19 showing the percentage of use of computer services (whether or not locally installed computer equipment is also used) reveals a very different pattern from the previous combined penetration of computer equipment and/or services.

- There is no longer a strong correlation between size of establishment and extent of use of computer services.

    - In most industry sectors, medium size establishments make more use of computer services than do larger establishments.

    - In the insurance and finance and banking sectors, the smallest branches and independents rely more on the use of computer services than larger establishments in these sectors do.

    - The same is true for independent establishments in the discrete manufacturing, transportation, utilities, and retail trade sectors.

- While the degree of use of computer services mainly parallels the rate of expenditure for computer services among the various industries, retail stores are an exception.

    - Retail stores spend less per employee than any other industry, but a relatively high percentage of this amount is spent for computer services.

G. CURRENT APPLICATIONS OF COMPUTERS

- Small establishments still use computers (whether on their own equipment or on remote computing services) uniformly more often for the common financial and administrative applications, such as payroll, accounts receivable and payable, billing, and general ledger, rather than for the industry specific

applications such as bill of materials in manufacturing and student grade reporting in education.

- The typical pattern of more automation and heavier use by the larger size establishments holds true in the financial/administrative application area (see Exhibits III-20, 21, and 22).

- Consistent with the progress of the "automation line" discussed in the Executive Summary, it is the 20-99 employee group of establishments who expect to show the most progress in automating financial/administrative applications in the next five years, either by newly entering the automated ranks or by adding new applications to those already automated.

  - Many establishments of this size do not have sufficient staff to support this expansion, thus opening new markets for computer software and firmware vendors, as well as for marketeers of multi-function equipment.

- The only surprise in these three exhibits is how little automated the retail sector is, particularly among the medium and smallest establishments, and perhaps more significant, how almost no progress is foreseen by these respondents in the next five years. INPUT believes this outlook is unduly restrictive, and that a medium rate of growth is more appropriate.

- Exhibits III-23, 24, and 25 show the relative use of EDP for industry specific applications, and how much growth is foreseen by respondents in the next five years to the extent that these applications will be automated.

- These exhibits reveal that in some sectors (transportation, utilities, and wholesale) the smallest establishments reported more applications automated than the medium size establishments did.

- With these exceptions, the typical "automation line" pattern still holds true, with larger establishments progressively more automated than smaller establishments.

- Growth in the number of industry specific applications automated is planned by both medium and larger sized establishments in about half the sectors, but by the smallest establishments only in discrete manufacturing.

  - Automation of production-related functions offers a much higher return on investment in discrete manufacturing than automation of administrative functions.

H. CURRENT USE OF OFFICE AUTOMATION EQUIPMENT

- Office automation covers many aspects of the processing, verification, storage and retrieval, and transmission of information. In this report, the use of word processing equipment is analyzed as the bellwether of progress in office automation.

- Exhibits III-26, 27, and 28 show an increasing trend to use word processing equipment as the size of establishment increases:

  - Only four of twelve industry sectors report the use of word processing equipment by establishments with less than twenty employees.

  - All industry sectors except retail report that establishments of 100-499 employees are using word processing equipment.

- Use of word processing equipment by the larger size establishment reaches the 67 percent mark among junior colleges (education), accounting firms ("other services"), branches of Fortune 50 banks, and branches of state governments.

- Branches of "Big Eight" accounting firms with 20-99 employees also report use of word processing equipment at 64 percent of these establishments.

- General levels of use among the 20-99 employee group fall in the 10 to 25 percent range.

- No clear trend of greater use by either branches or independents can be distinguished in any of the size ranges except the smallest, where independents are slightly more avid users.

  - Insurance and accounting both have higher ratios of clerical staff than the others sectors do, as well as a larger amount of paperwork, which may account for their higher levels of use of word processing.

I. CURRENT USE OF COMMUNICATIONS INTERCONNECT EQUIPMENT

- Since all establishments use telephones, the use of interconnect (non-telco) equipment was analyzed as a better indicator of the progress of communications automation among small establishments.

- Using this indicator reveals that many sectors report no interconnect equipment installed in any of the size ranges of establishment (see Exhibits III-29, 30, and 31).

  - Industry sectors reporting no use of communications interconnect equipment include transportation, utilities, insurance, health services, education, and state and local government.

  - INPUT believes that these respondents underestimate the true progress of communications automation because there is little brand name association with telephone equipment. However, the general indication

is true, that communications automation is less advanced among small establishments than either computer automation or office automation.

- Industry sectors notable for a relatively high use of communications interconnect equipment are:

  - Process manufacturing.

  - Wholesale.

  - Finance and banking.

  - "Other services" (accounting firms).

- In each of these four sectors, there is more reported use of communications interconnect equipment among medium size establishments (20-99 employees) than among either the larger or smaller size establishments.

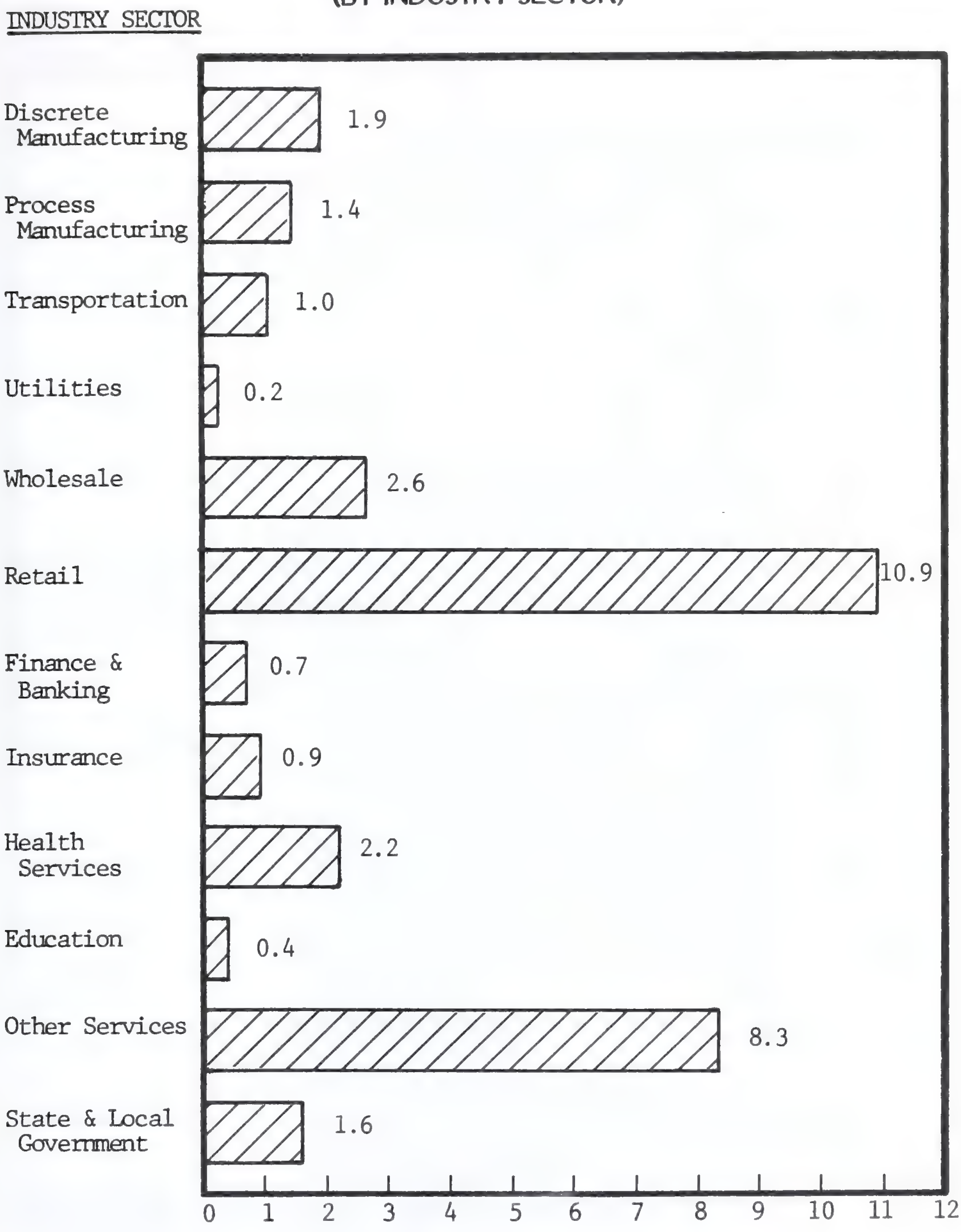
- Other industry size groups showing at least some use of communications interconnect equipment are:

  - Retail independents with 100-499 employees.

  - Discrete manufacturing, especially independents.

EXHIBIT III-1

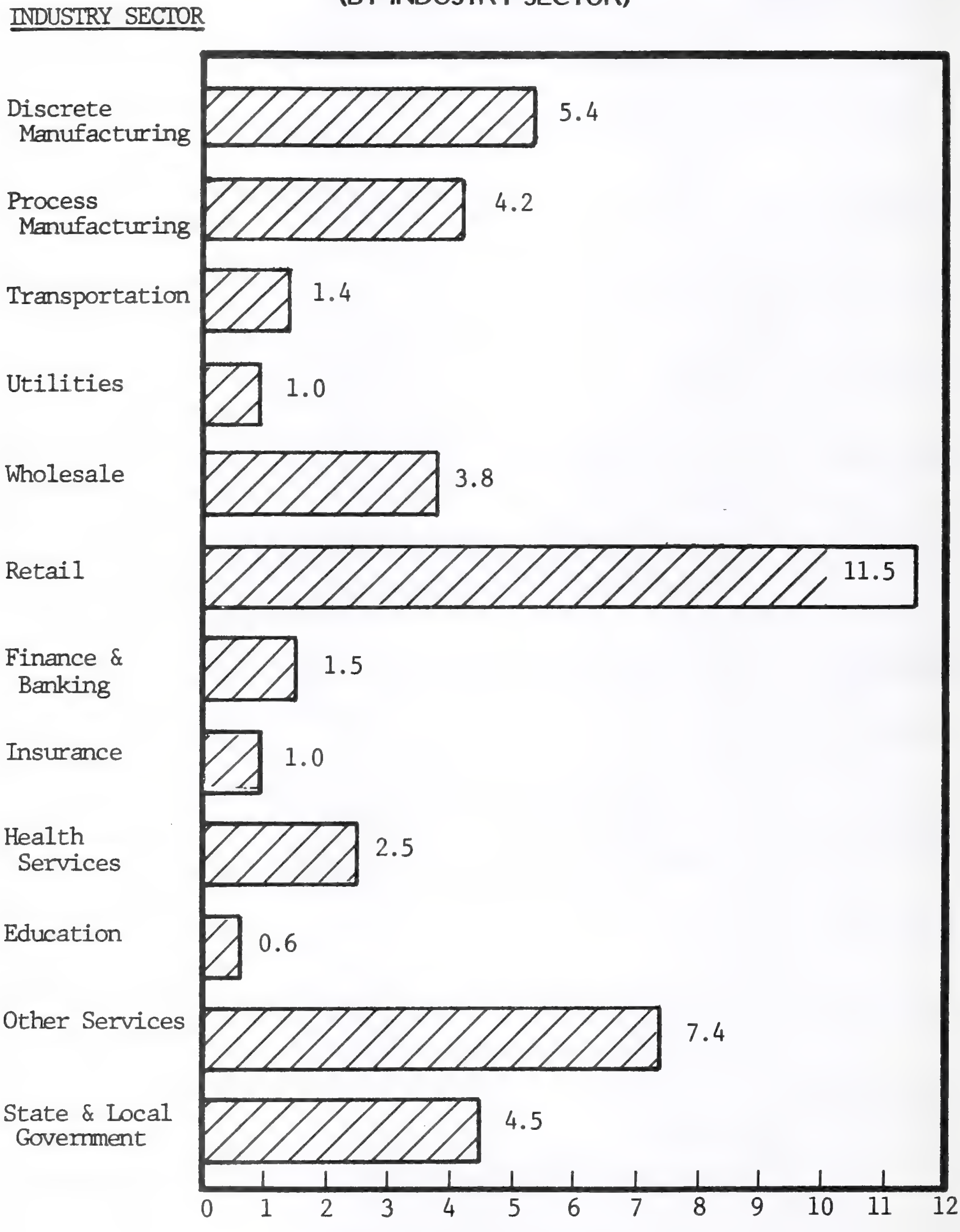
NUMBER OF ESTABLISHMENTS WITH LESS THAN 500 EMPLOYEES
(BY INDUSTRY SECTOR)



TOTAL NUMBER OF SMALL ESTABLISHMENTS REPRESENTED = 3,210,000

EXHIBIT III-2

NUMBER OF EMPLOYEES IN ESTABLISHMENTS OF LESS THAN 500 EMPLOYEES
(BY INDUSTRY SECTOR)



TOTAL NUMBER OF EMPLOYEES REPRESENTED = 44,800,000

EXHIBIT III-3

IMMEDIATE NEEDS FOR EDP EQUIPMENT/SERVICES IN ESTABLISHMENTS OF 100-499 EMPLOYEES

(BASED ON 244 RESPONDENT ESTABLISHMENTS)

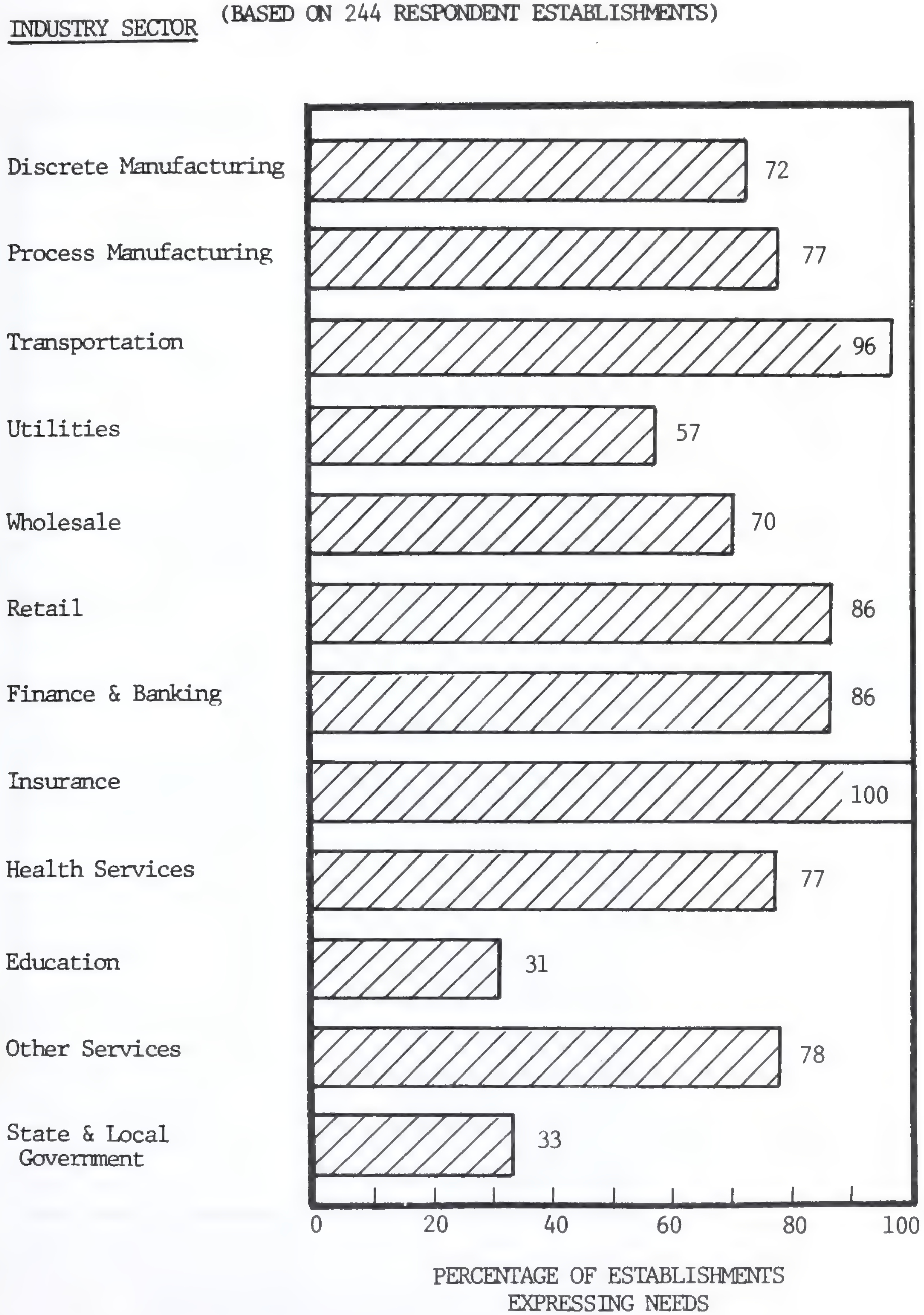


EXHIBIT III-4

IMMEDIATE NEEDS FOR EDP EQUIPMENT/SERVICES IN ESTABLISHMENTS OF 20-99 EMPLOYEES

(BASED ON 219 RESPONDENT ESTABLISHMENTS)

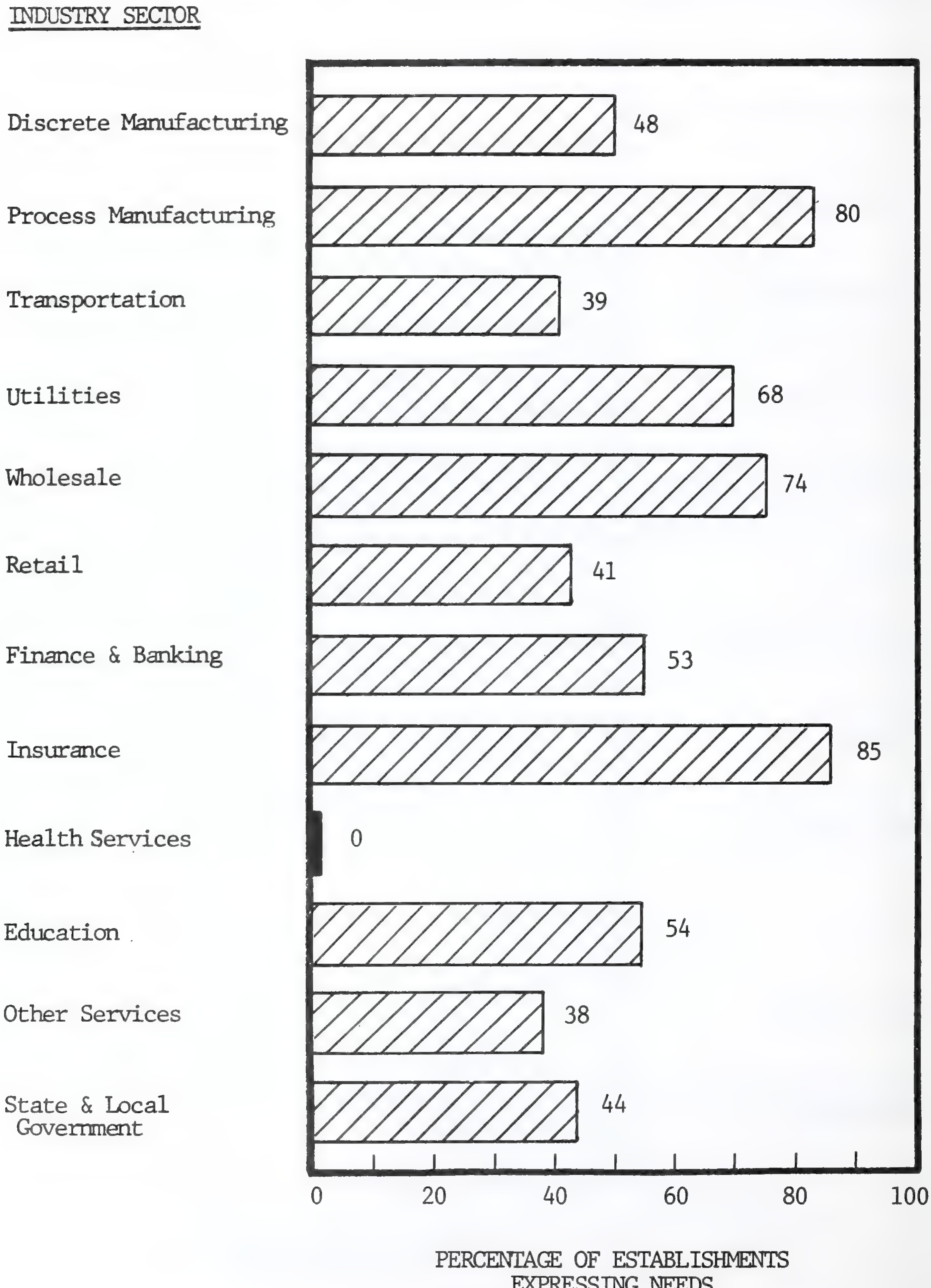


EXHIBIT III-5

IMMEDIATE NEEDS FOR EDP EQUIPMENT/SERVICES IN ESTABLISHMENTS OF 1-19 EMPLOYEES

(BASED ON 122 RESPONDENT ESTABLISHMENTS)

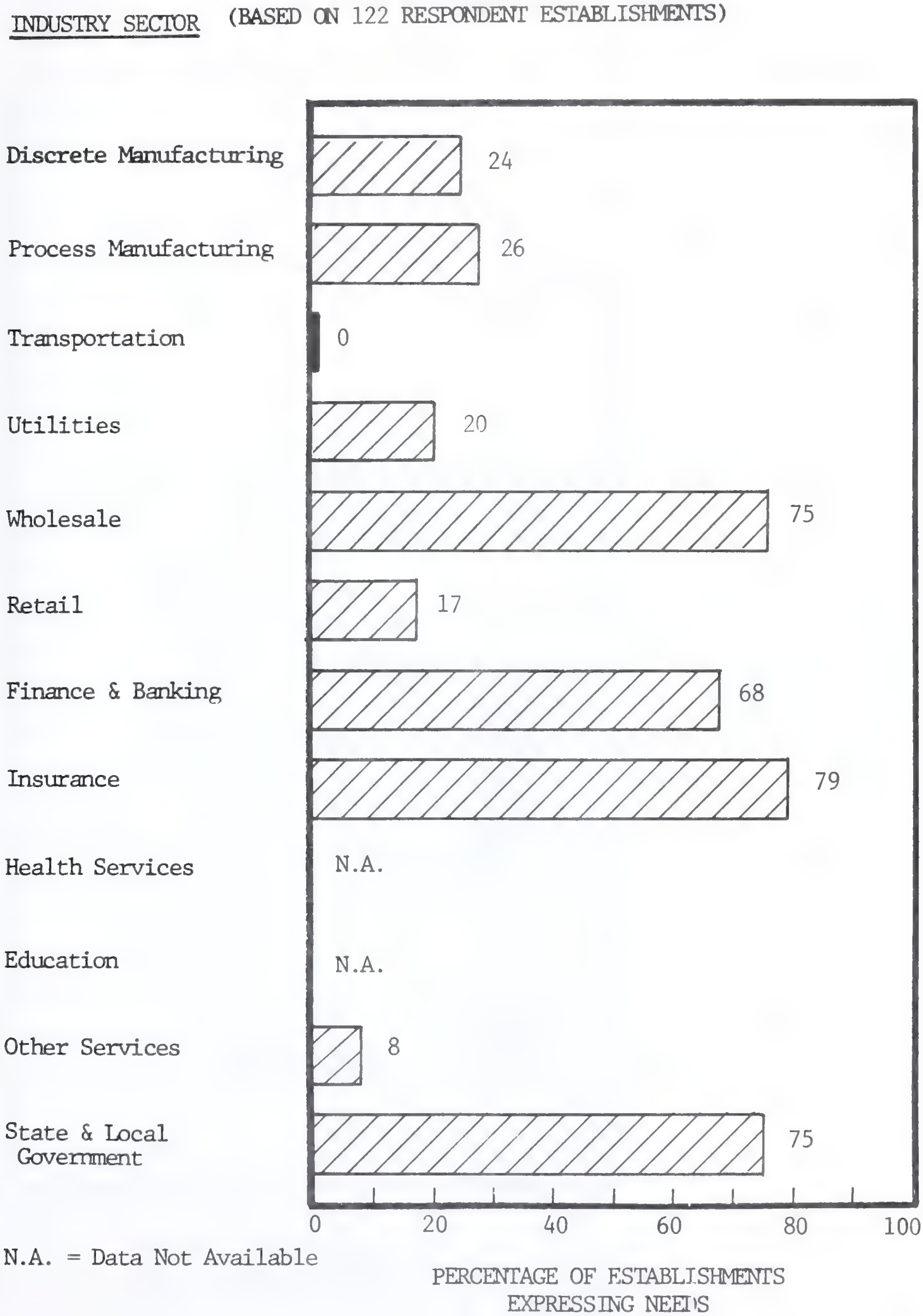


EXHIBIT III-6

IMMEDIATE NEEDS FOR OFFICE AUTOMATION IN ESTABLISHMENTS OF 100-499 EMPLOYEES

(BASED ON 244 RESPONDENT ESTABLISHMENTS)

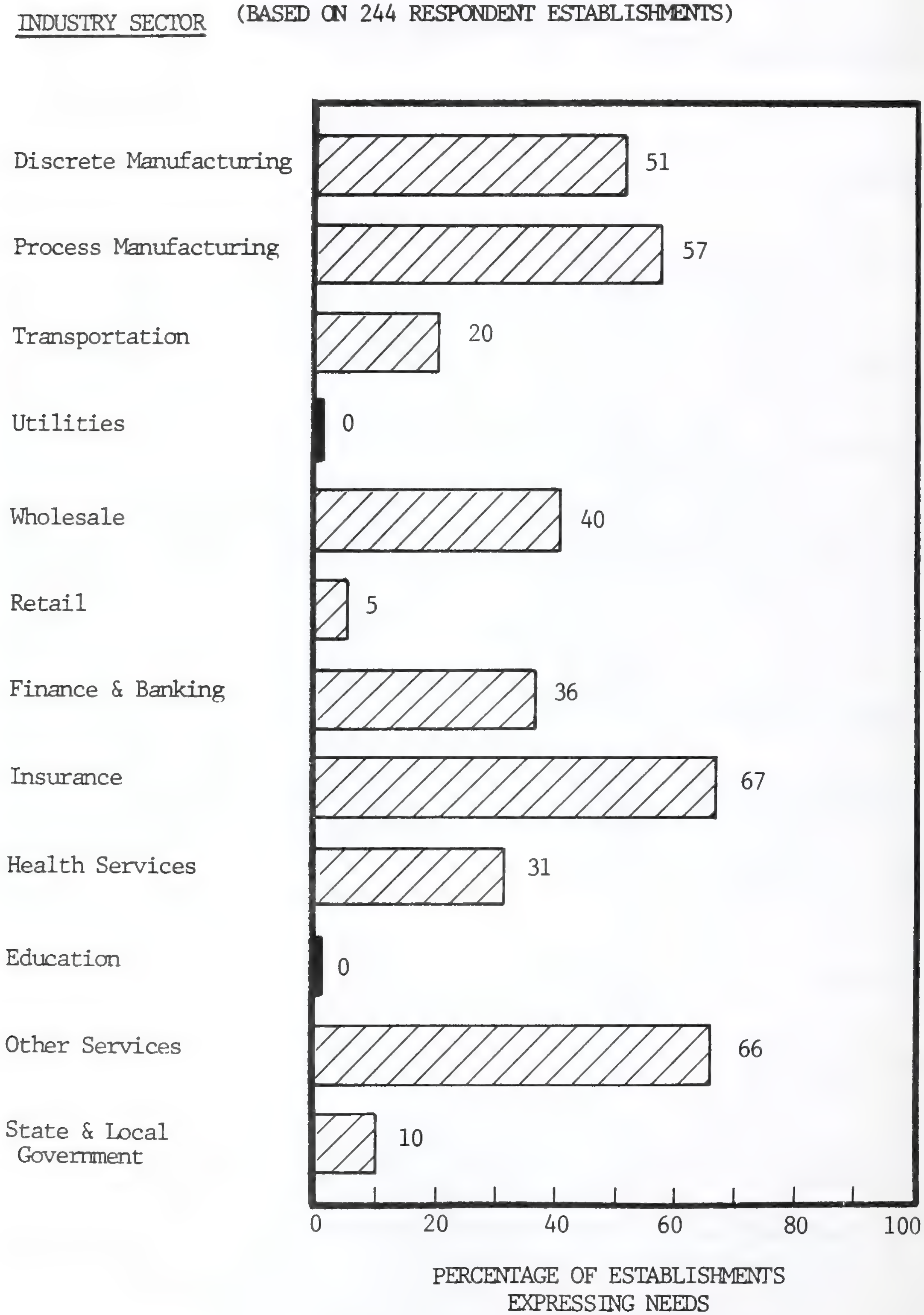


EXHIBIT III-7

IMMEDIATE NEEDS FOR OFFICE AUTOMATION IN ESTABLISHMENTS OF 20-99 EMPLOYEES

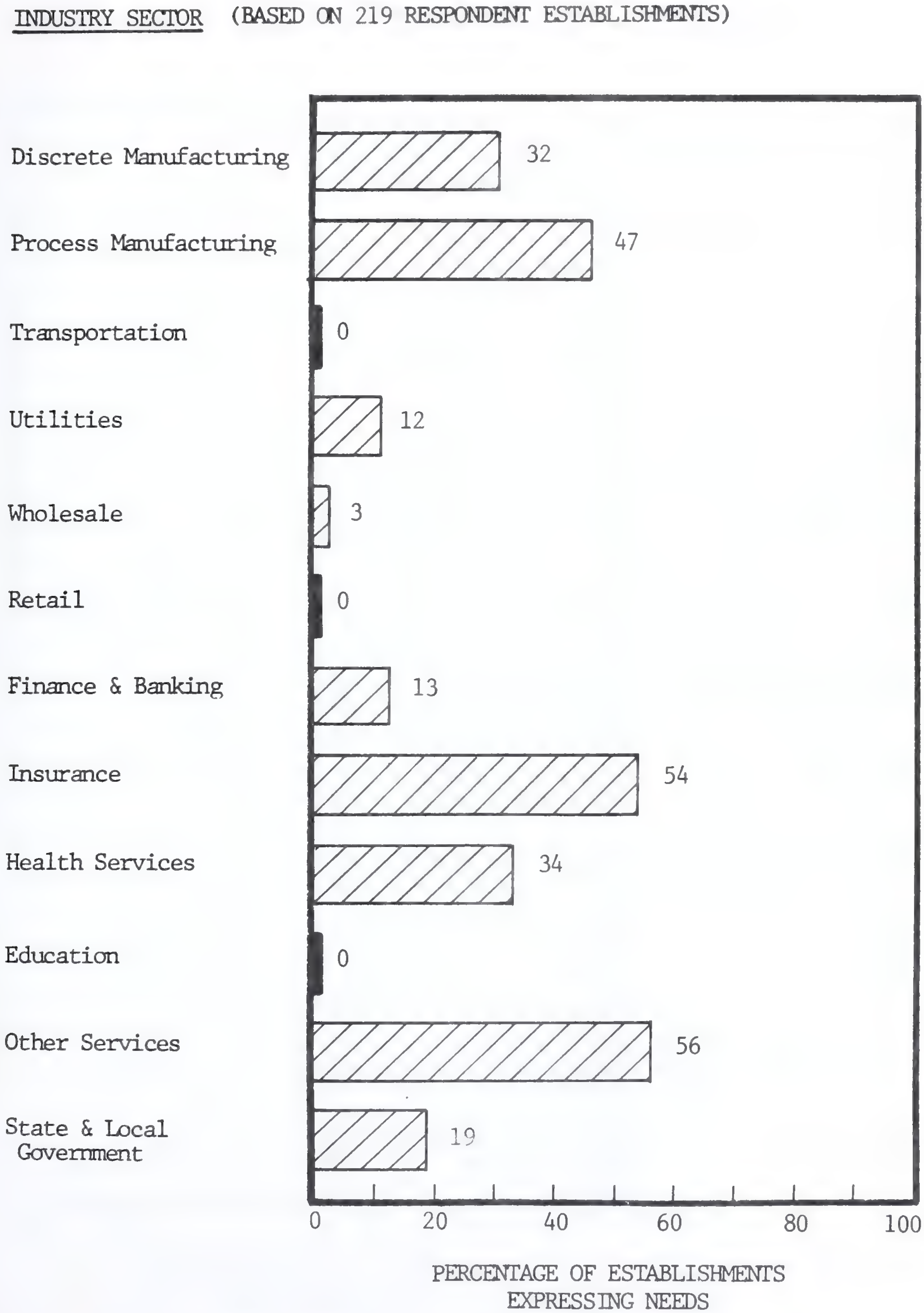
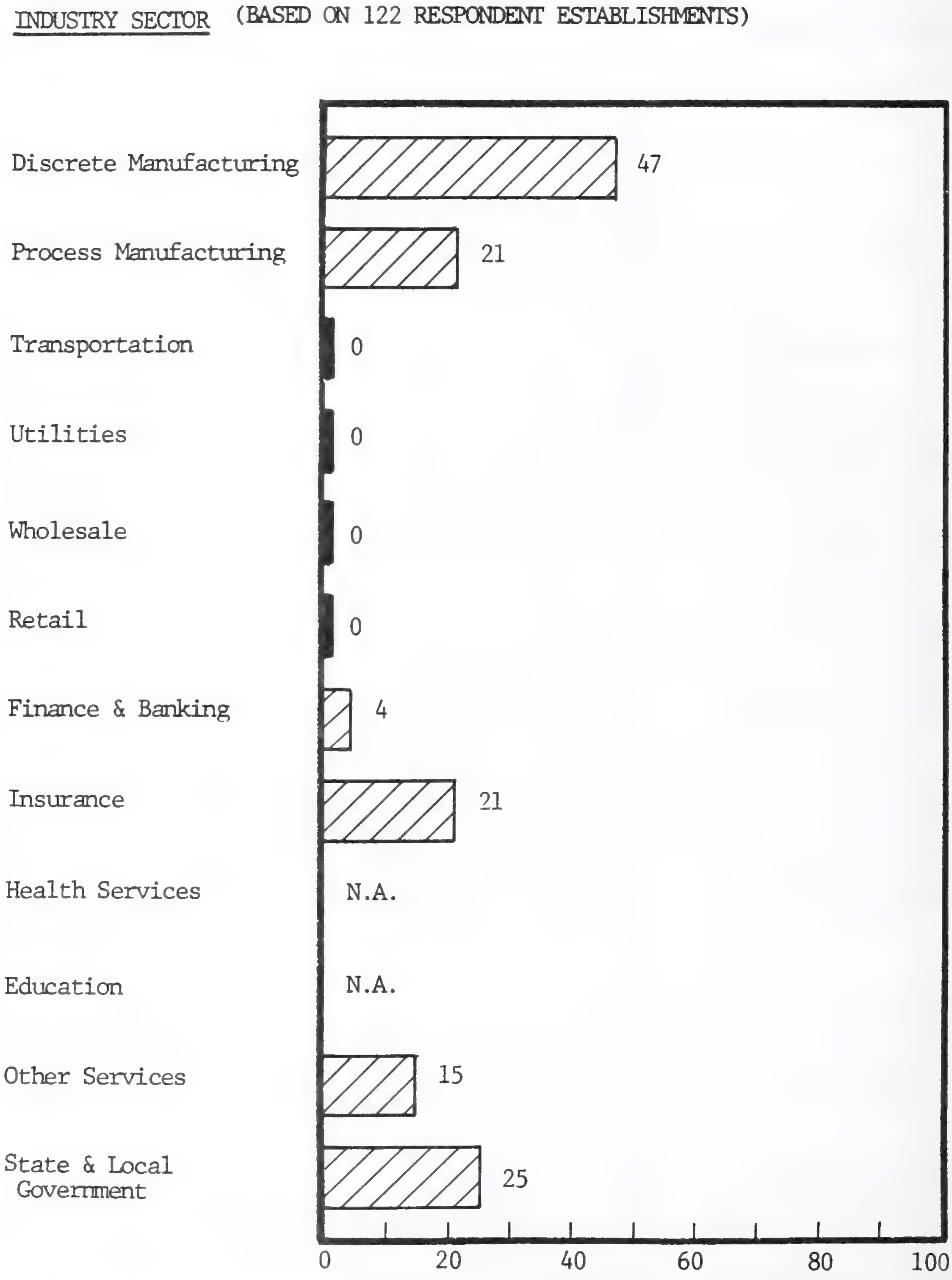


EXHIBIT III-8

IMMEDIATE NEEDS FOR OFFICE AUTOMATION IN ESTABLISHMENTS OF 1-19 EMPLOYEES

(BASED ON 122 RESPONDENT ESTABLISHMENTS)



N.A. = Data Not Available

EXHIBIT III-9

IMMEDIATE NEEDS FOR COMMUNICATION IMPROVEMENTS IN ESTABLISHMENTS OF 100-499 EMPLOYEES

(BASED ON 244 RESPONDENT ESTABLISHMENTS)

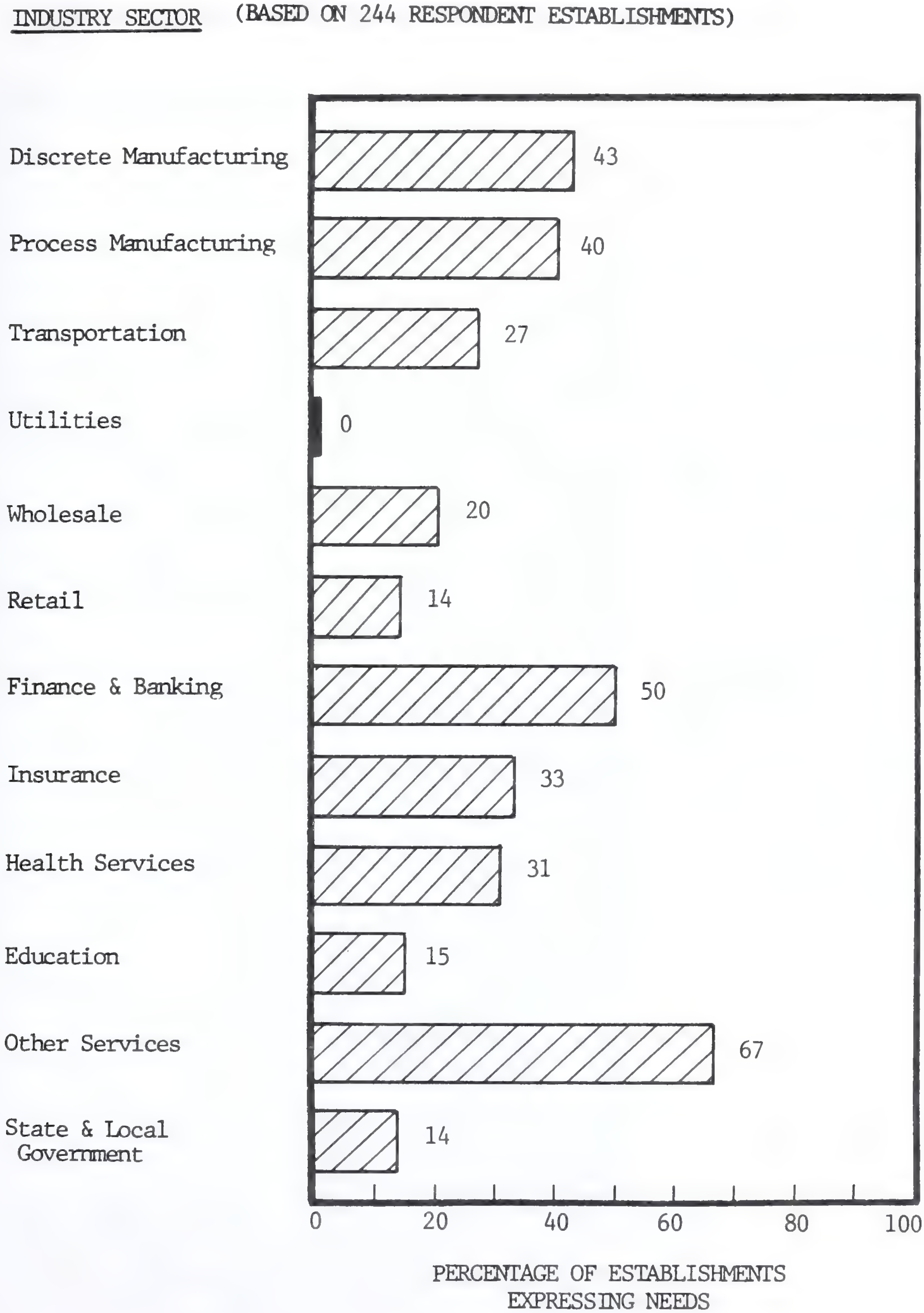


EXHIBIT III-10

IMMEDIATE NEEDS FOR COMMUNICATION IMPROVEMENTS IN ESTABLISHMENTS OF 20-99 EMPLOYEES

(BASED ON 219 RESPONDENT ESTABLISHMENTS)

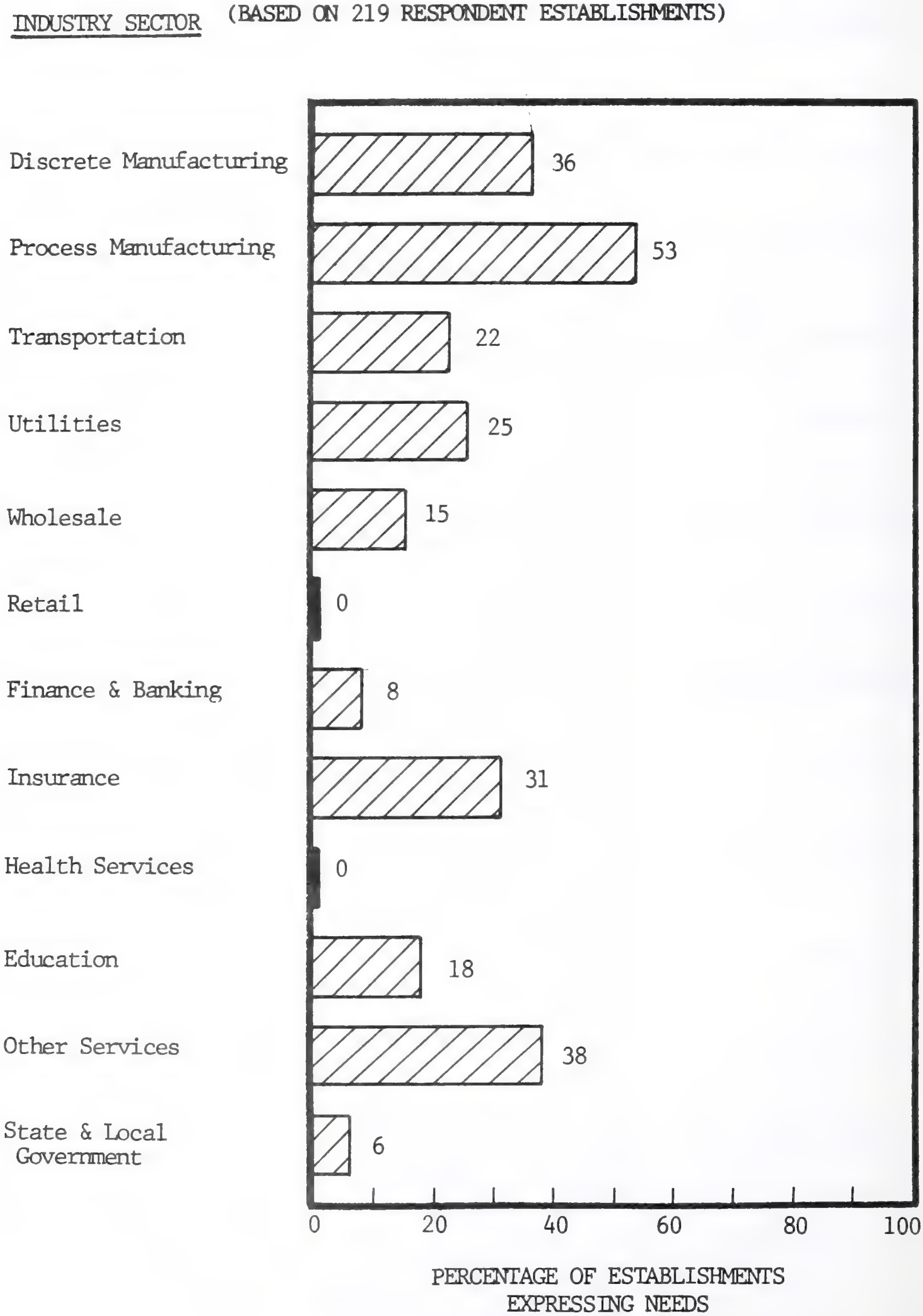
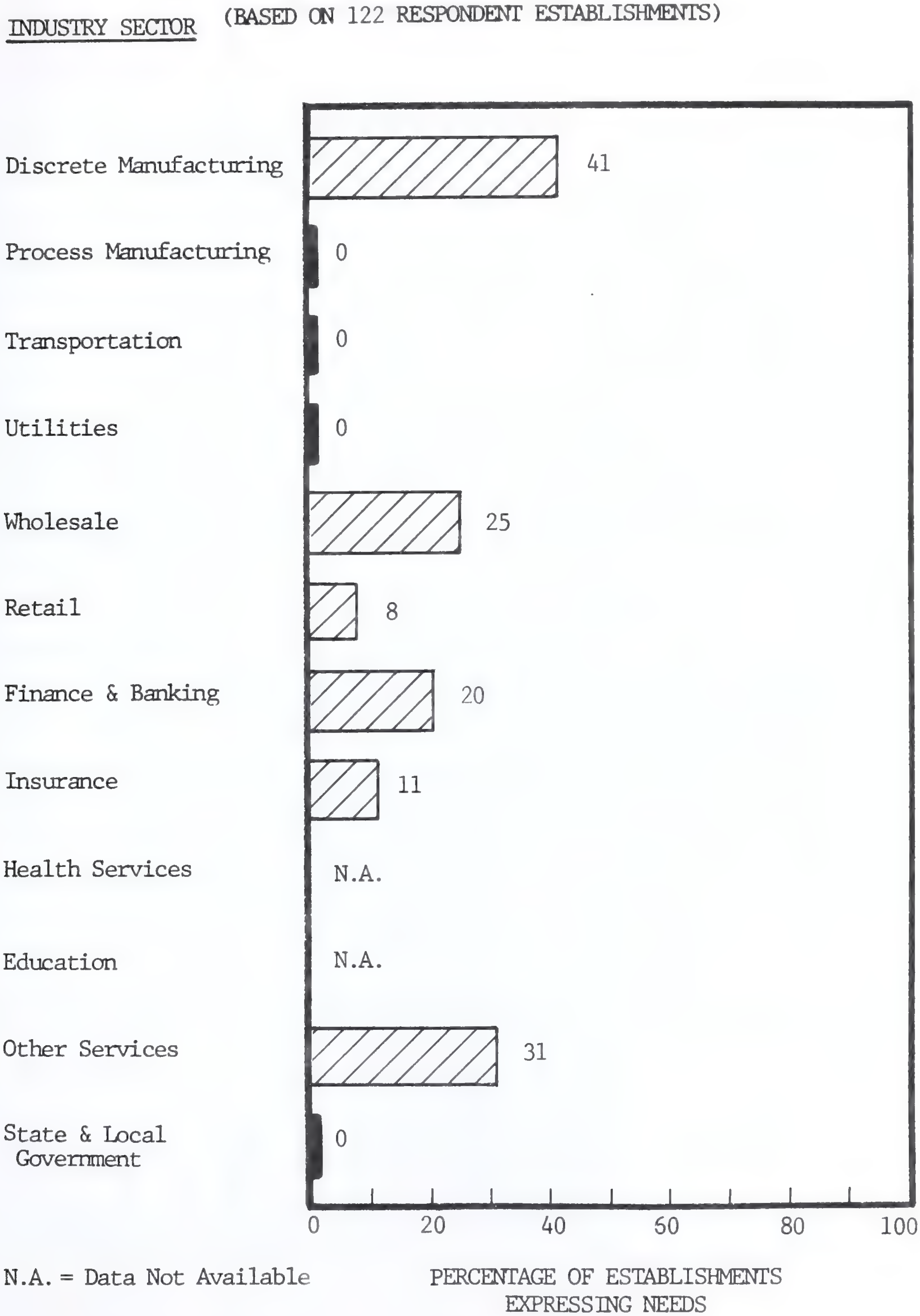


EXHIBIT III-11

IMMEDIATE NEEDS FOR COMMUNICATION IMPROVEMENTS IN ESTABLISHMENTS OF 1-19 EMPLOYEES

(BASED ON 122 RESPONDENT ESTABLISHMENTS)



N.A. = Data Not Available

EXHIBIT III-12

EXPENDITURE RATES AND AMOUNTS FOR EDP, OFFICE, AND COMMUNICATIONS EQUIPMENT AND SERVICES

INDUSTRY SECTOR	AVERAGE ANNUAL EXPENDITURE PER EMPLOYEE ($)				TOTAL ANNUAL EXPENDITURE BY SMALL ESTABLISHMENTS ($ MILLIONS)				
	EDP EQUIP., SVCS, & SUPPLIES	OFFICE EQUIP.	COMMUNI-CATIONS EQUIP. & SVCS.	RANK	EDP EQUIP., SVCS, & SUPPLIES	OFFICE EQUIP.	COMMUNI-CATIONS EQUIP. & SVCS.	TOTAL EXP.	RANK
Discrete Manufacturing	$ 220	$ 157	$ 409	6th	$1,049	$ 936	$ 2,437	$ 4,422	3rd
Process Manufacturing	195	177	452	5th	825	750	1,910	3,485	4th
Transportation	149	131	346	9th	208	183	481	872	11th
Utilities	250	220	579	2nd	256	225	592	1,073	9th
Wholesale	134	117	309	11th	513	450	1,184	2,147	7th
Retail	105	92	244	12th	1,210	1,061	2,794	5,065	2nd
Finance & Banking	414	363	957	1st	645	566	1,492	2,703	6th
Insurance	217	191	502	4th	216	190	500	906	10th
Health Services	145	127	336	10th	360	316	833	1,509	7th
Education	158	139	368	7th	88	77	204	369	12th
Other Services	234 *	205 *	541 *	3rd	N.C.	N.C.	N.C.	N.C.	1st
State & Local Government	153	134	354	8th	689	604	1,591	2,884	5th

N.C. = Not calculated due to diversity of sector; estimated to equal or exceed Retail.
* Applies to accounting only.

EXHIBIT III-13

PERCENTAGE OF OUTSIDE EDP EXPENDITURES
ATTRIBUTED TO COMPUTER SERVICES VENDORS

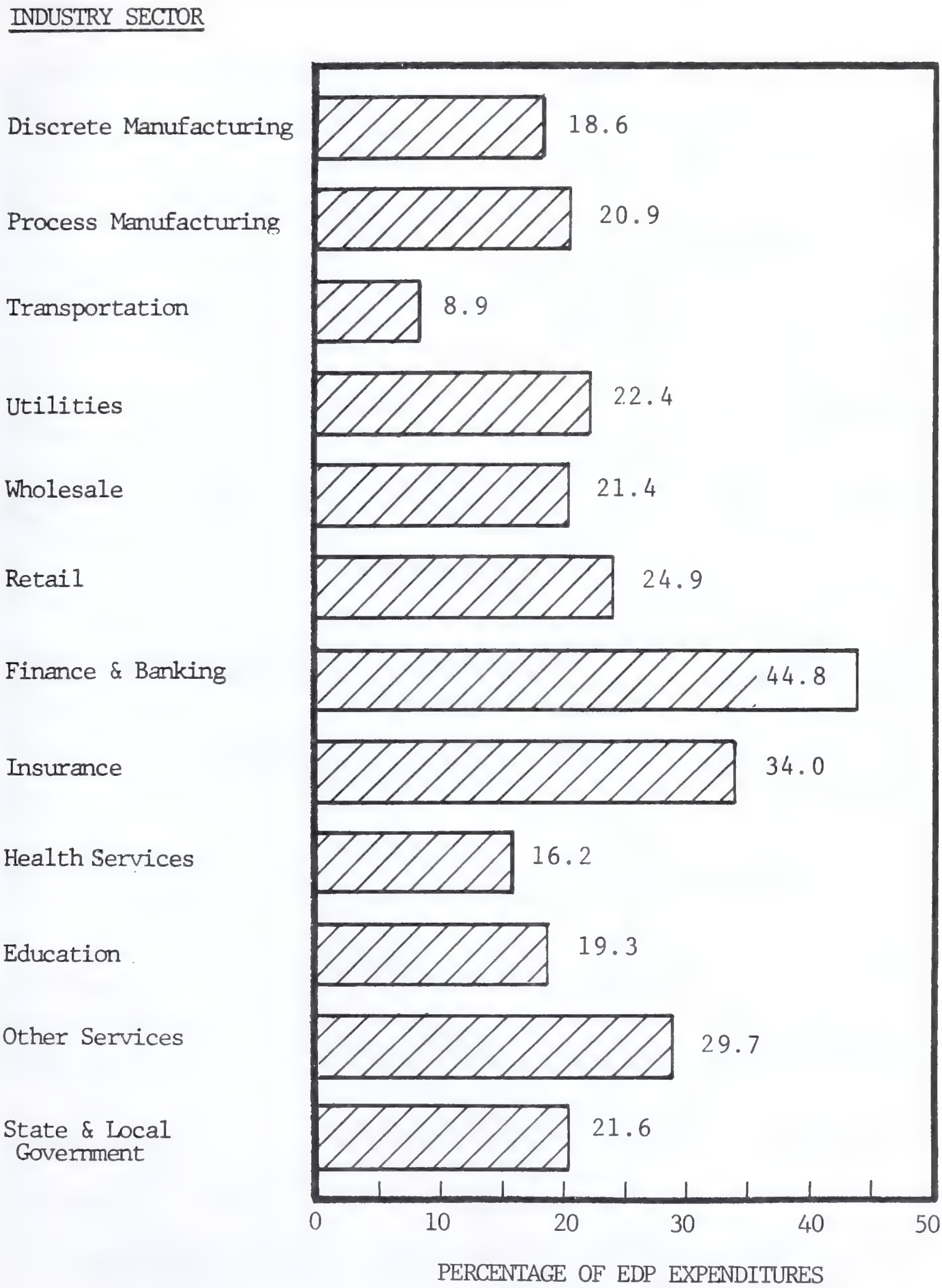


EXHIBIT III-14

USE OF EDP EQUIPMENT/SERVICES IN ESTABLISHMENTS
OF 100-499 EMPLOYEES

(BASED ON 244 RESPONDENT ESTABLISHMENTS)

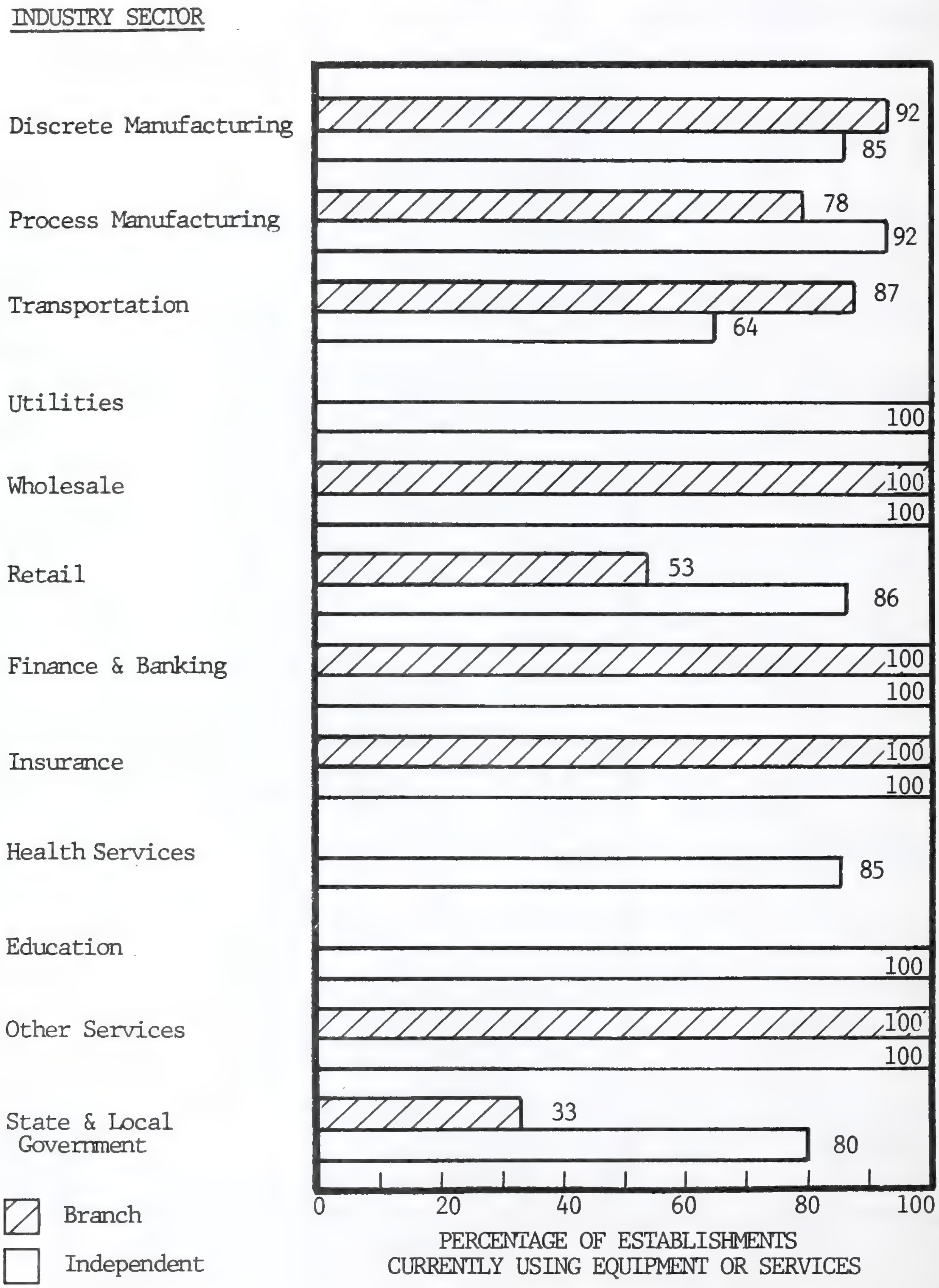


EXHIBIT III-15

USE OF EDP EQUIPMENT/SERVICES IN ESTABLISHMENTS OF 20-99 EMPLOYEES

(BASED ON 219 RESPONDENT ESTABLISHMENTS)

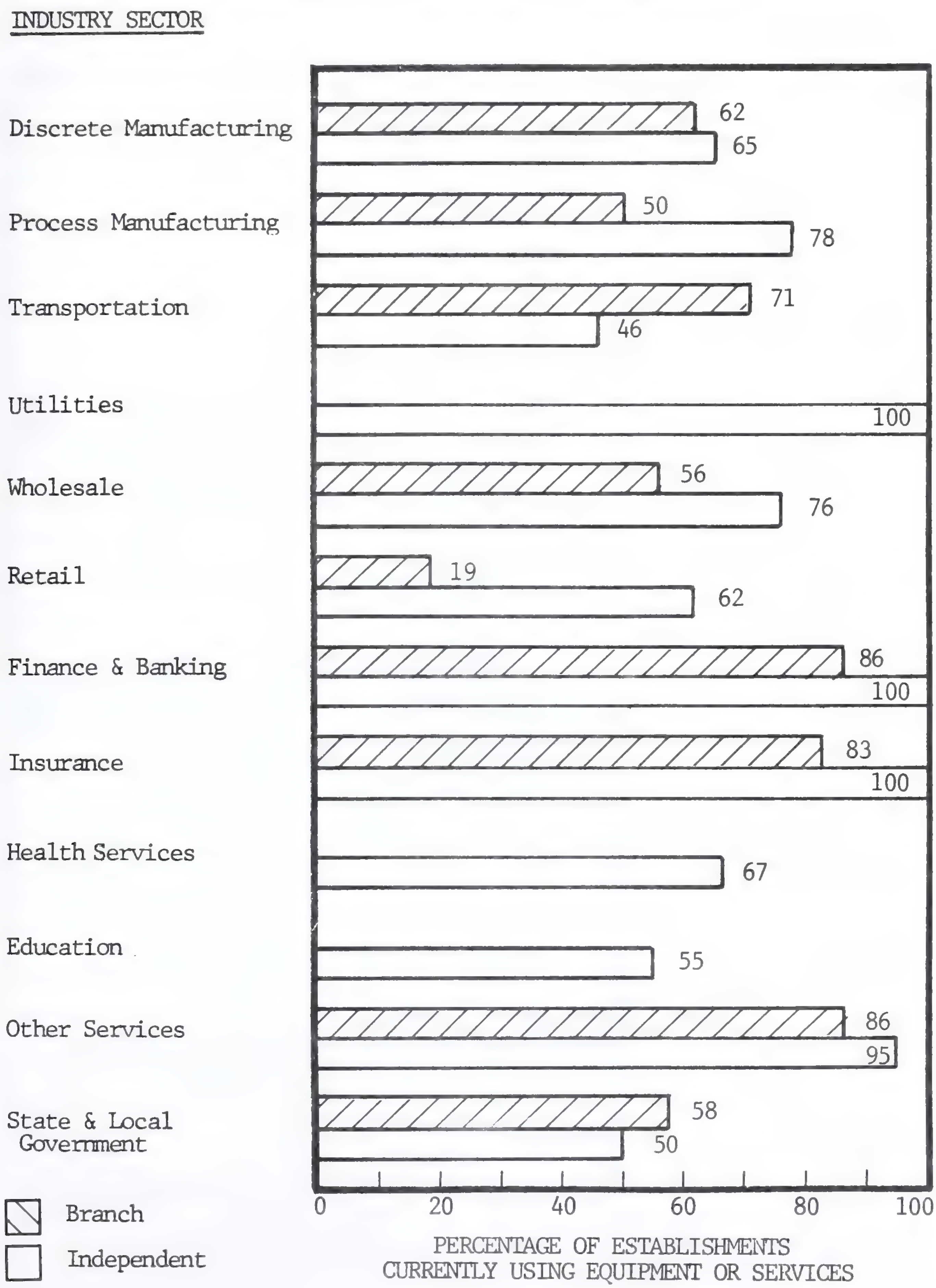


EXHIBIT III-16

USE OF EDP EQUIPMENT/SERVICES IN ESTABLISHMENTS OF 1-19 EMPLOYEES

(BASED ON 122 RESPONDENT ESTABLISHMENTS)

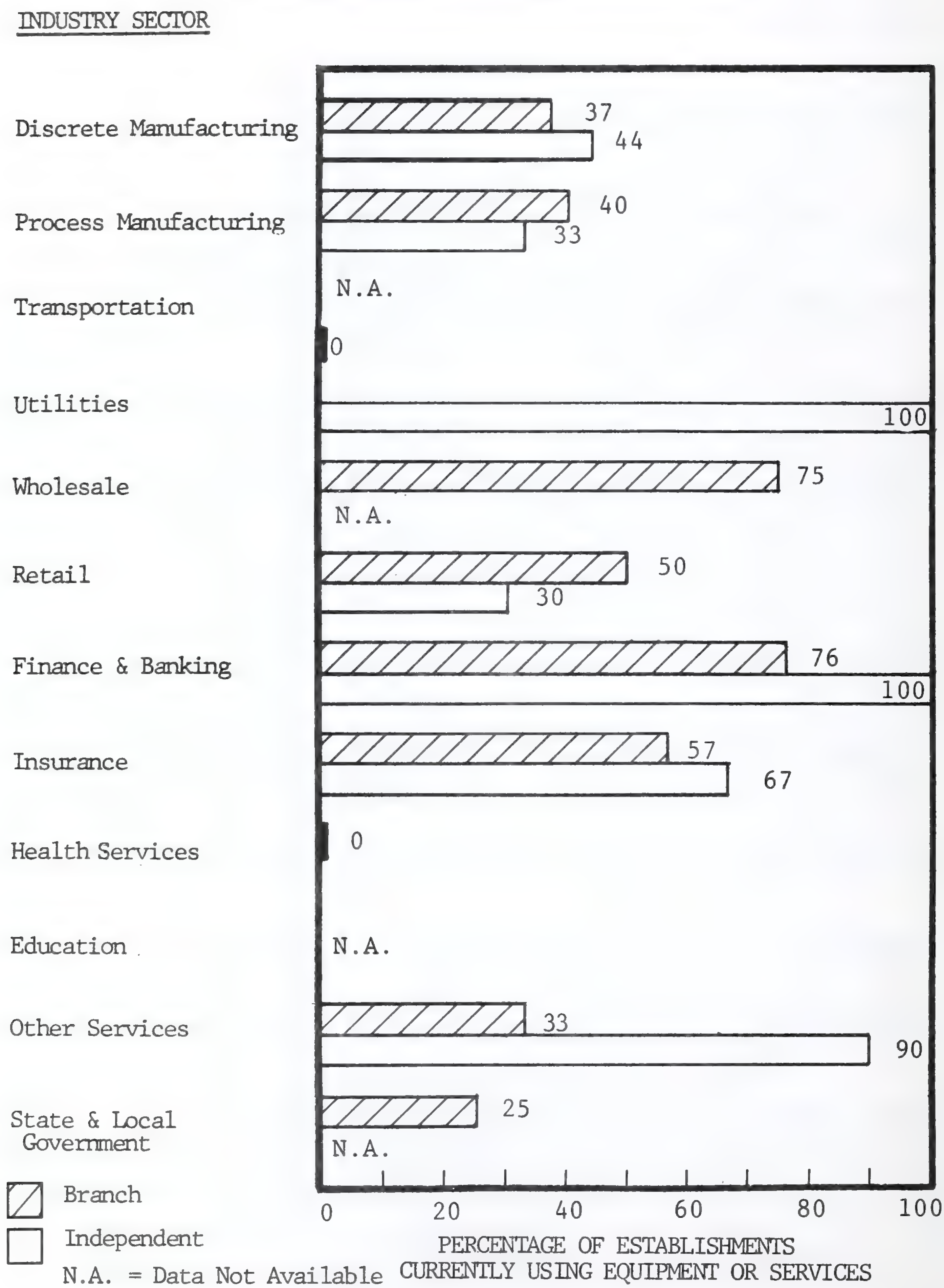


EXHIBIT III-17

USE OF COMPUTER SERVICES IN ESTABLISHMENTS
OF 100-499 EMPLOYEES
(BASED ON 244 RESPONDENT ESTABLISHMENTS)

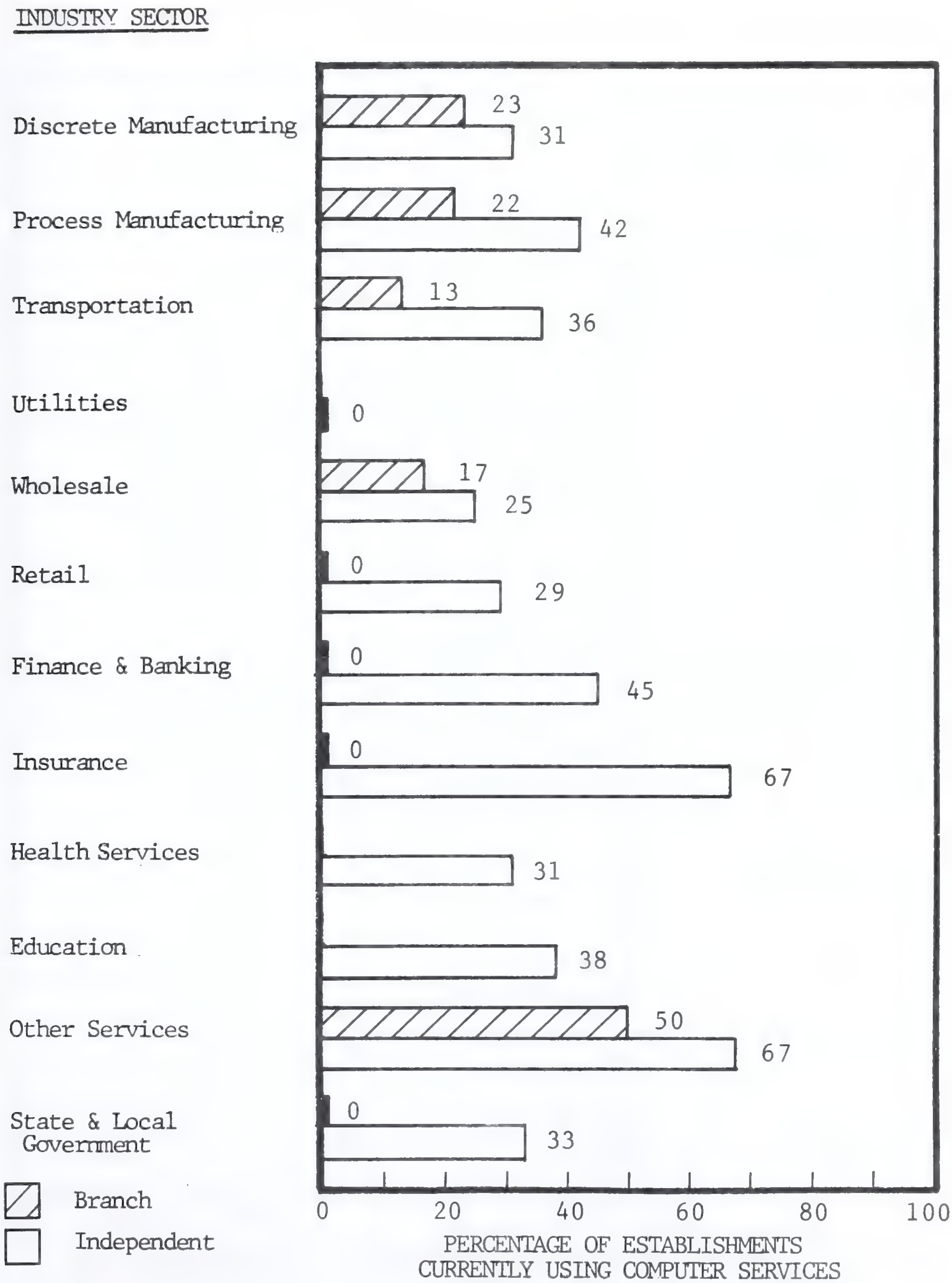


EXHIBIT III-18

USE OF COMPUTER SERVICES IN ESTABLISHMENTS
OF 20-99 EMPLOYEES

(BASED ON 219 RESPONDENT ESTABLISHMENTS)

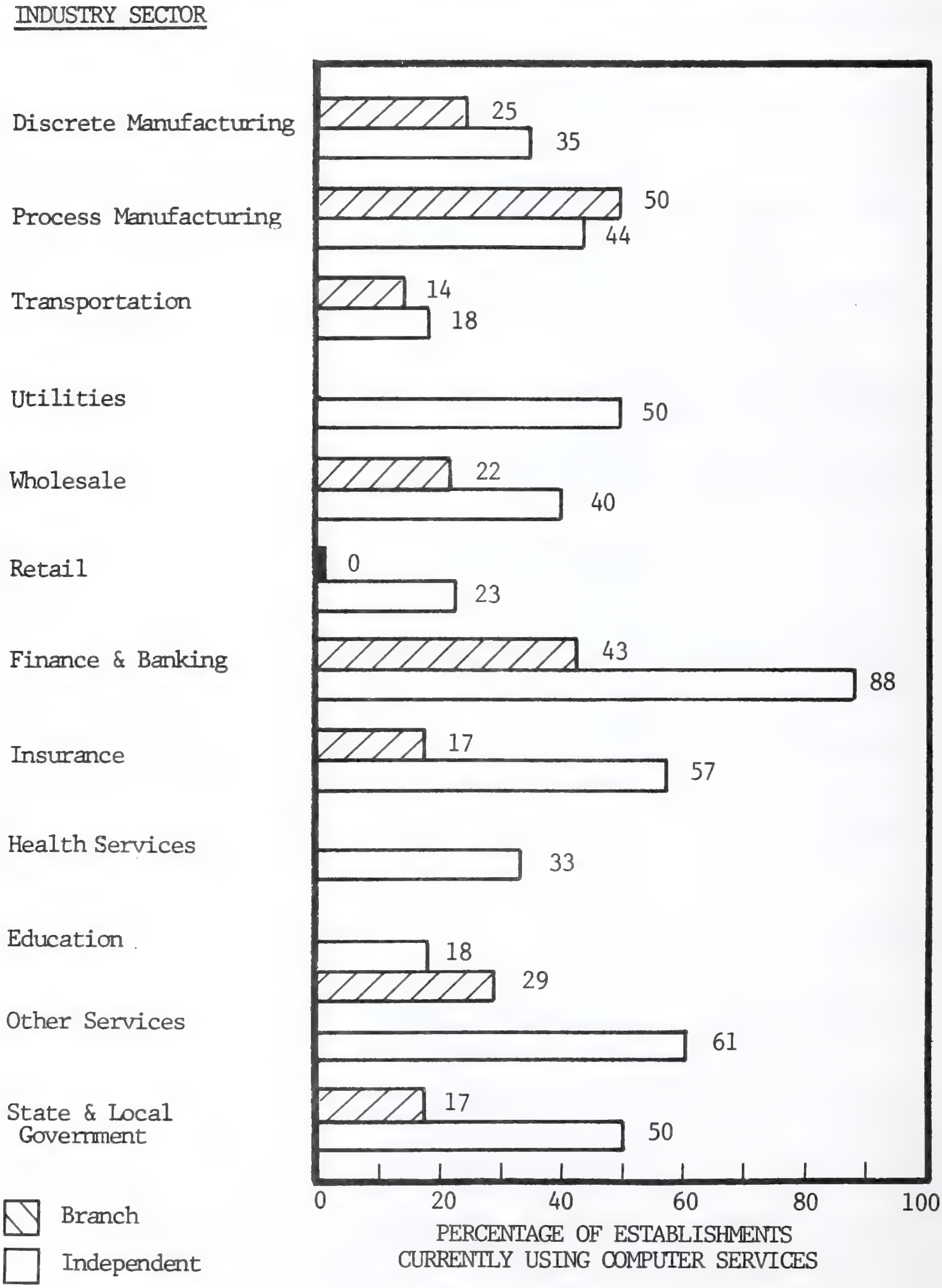


EXHIBIT III-19

USE OF COMPUTER SERVICES IN ESTABLISHMENTS OF 1-19 EMPLOYEES

(BASED ON 122 RESPONDENT ESTABLISHMENTS)

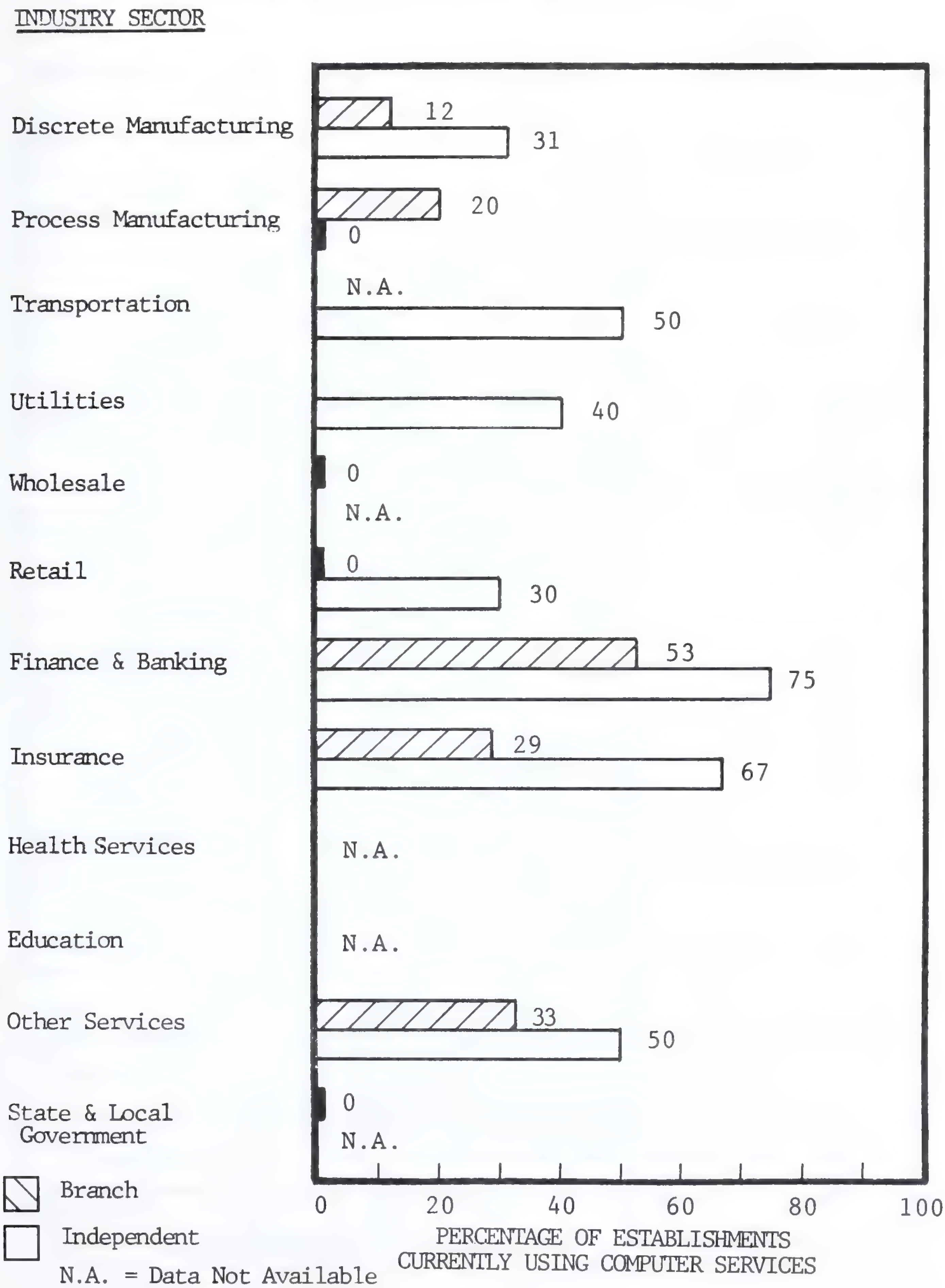


EXHIBIT III-20

USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS (1978/1983)
IN ESTABLISHMENTS OF 100-499 EMPLOYEES
(BASED ON 244 RESPONDENT ESTABLISHMENTS)

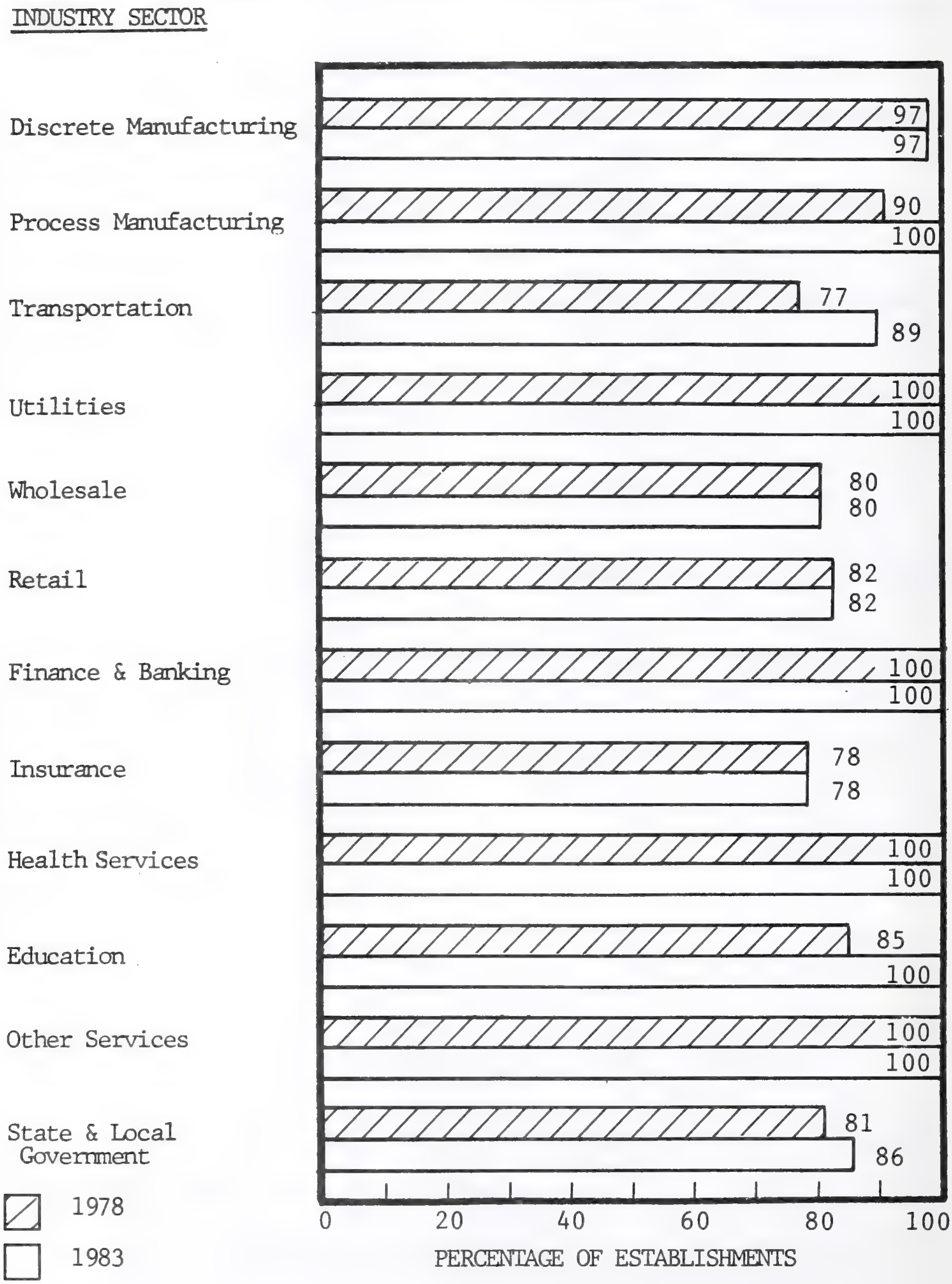


EXHIBIT III-21

USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS (1978/1983)
IN ESTABLISHMENTS OF 20-99 EMPLOYEES

(BASED ON 219 RESPONDENT ESTABLISHMENTS)

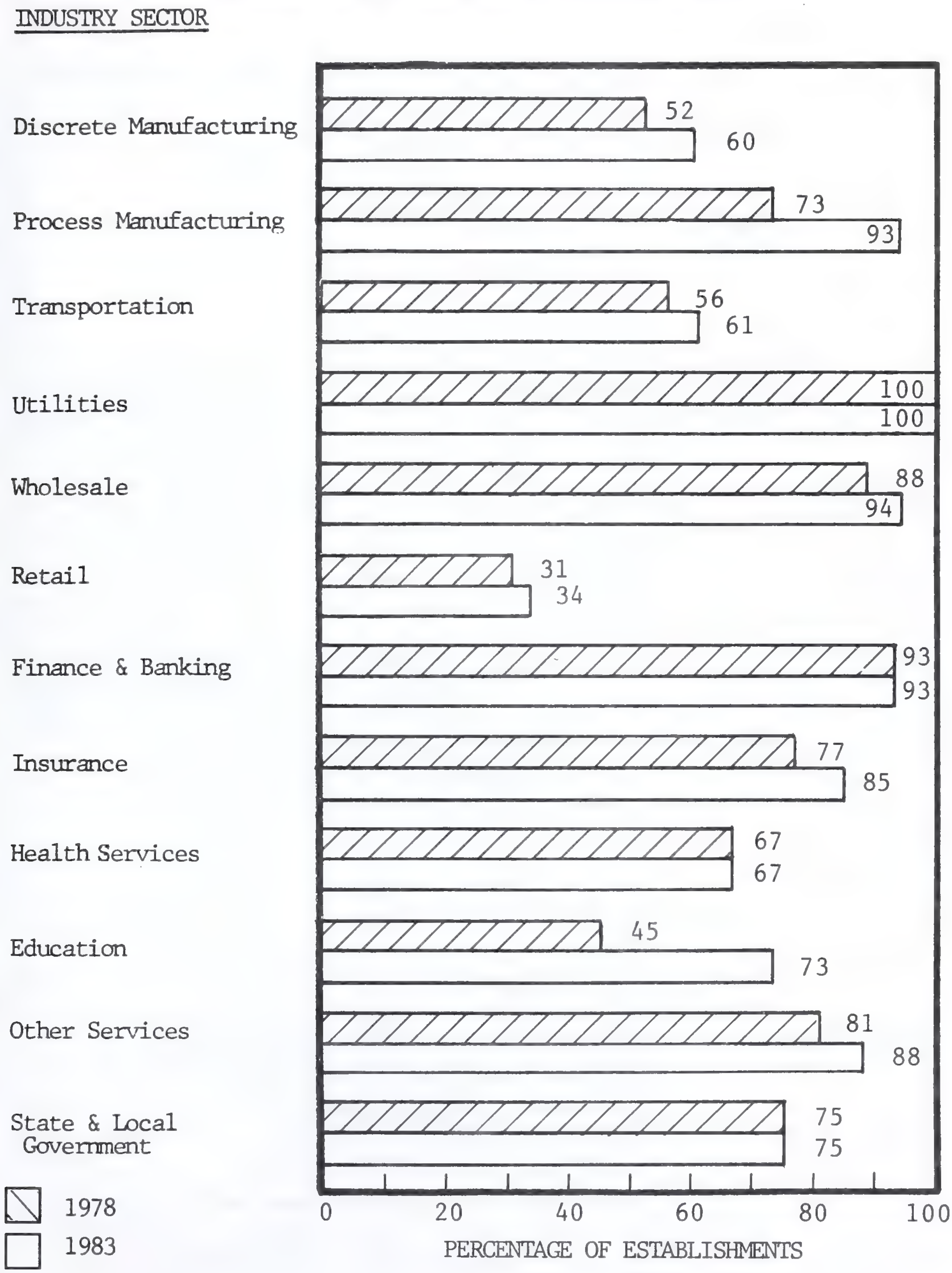


EXHIBIT III-22

USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS (1978/1983)
IN ESTABLISHMENTS OF 1-19 EMPLOYEES
(BASED ON 122 RESPONDENT ESTABLISHMENTS)

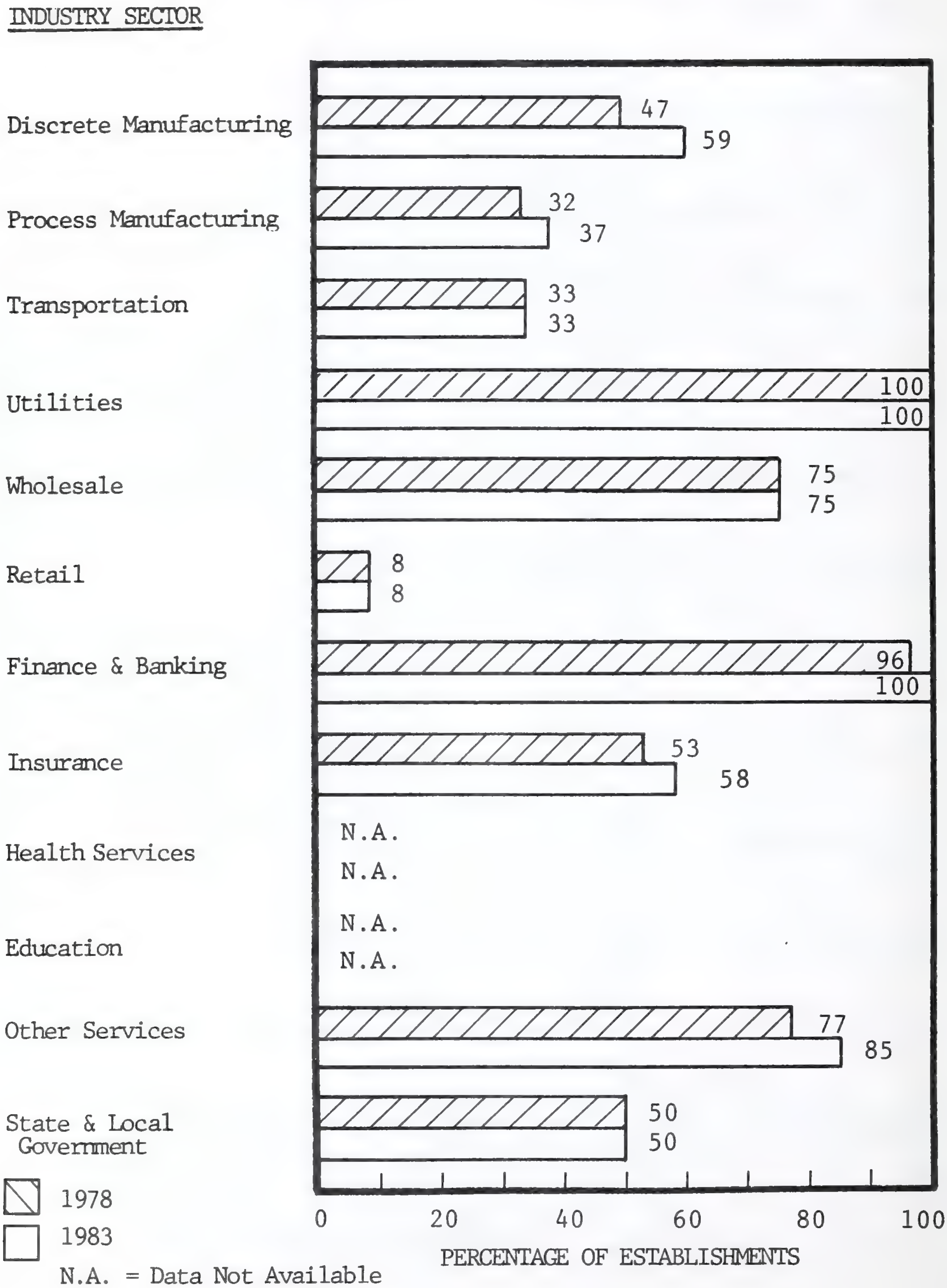


EXHIBIT III-23

USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS (1978/1983)
IN ESTABLISHMENTS OF 100-499 EMPLOYEES
(BASED ON 244 RESPONDENT ESTABLISHMENTS)

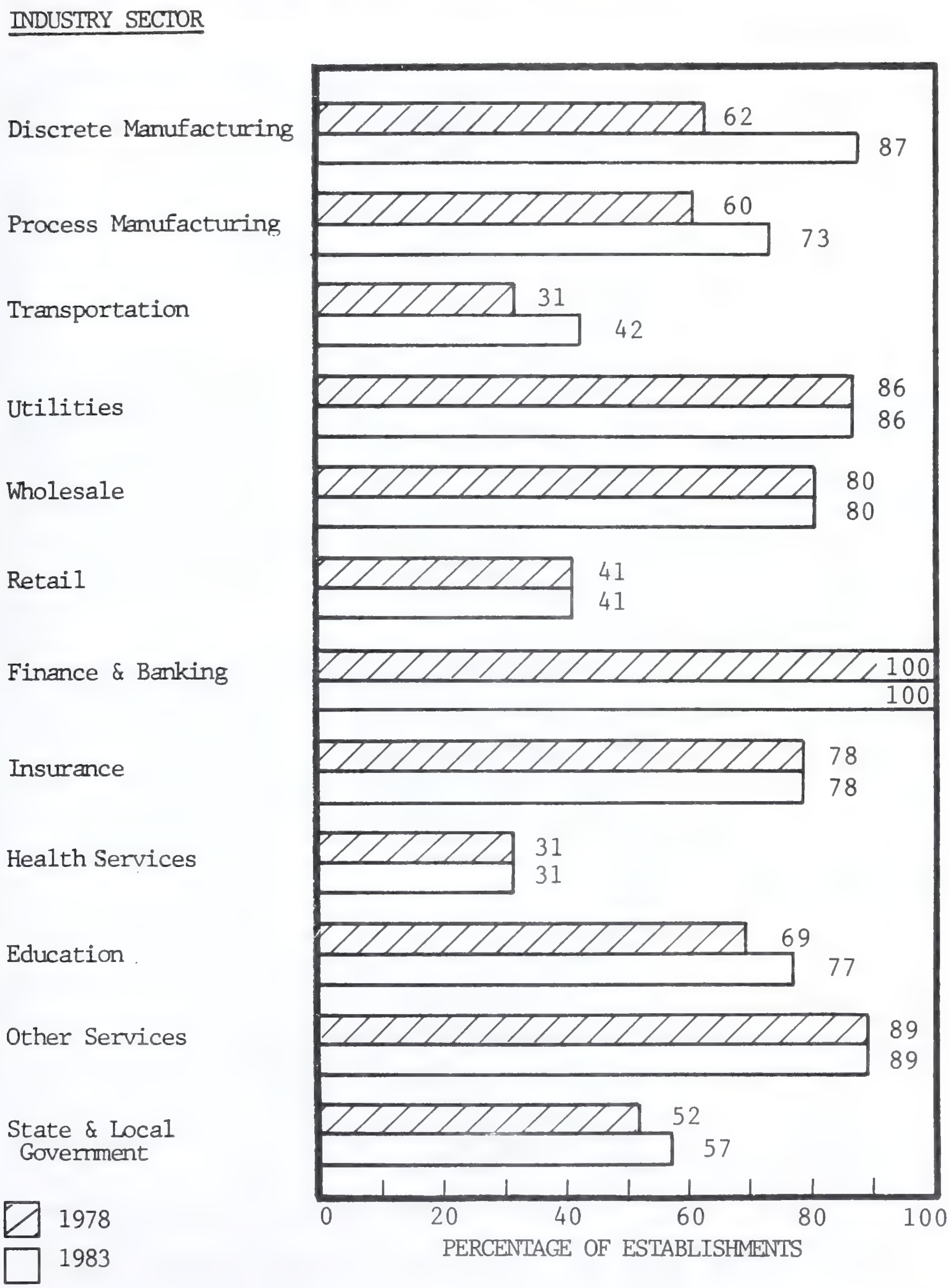


EXHIBIT III-24

USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS (1978/1983)
IN ESTABLISHMENTS OF 20-99 EMPLOYEES
(BASED ON 219 RESPONDENT ESTABLISHMENTS)

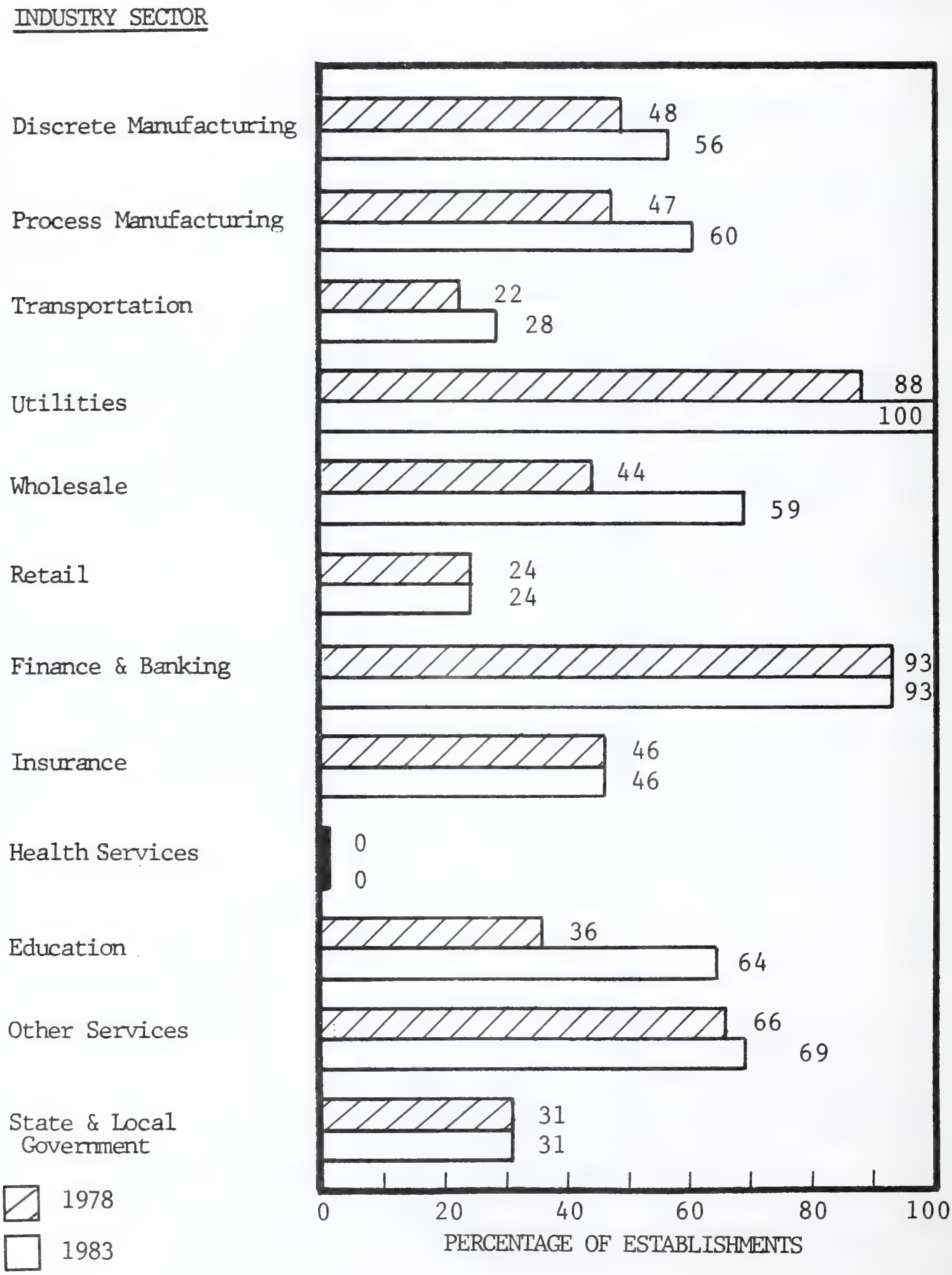


EXHIBIT III-25

USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS (1978/1983)
IN ESTABLISHMENTS OF 1-19 EMPLOYEES

INDUSTRY SECTOR (BASED ON 122 RESPONDENT ESTABLISHMENTS)

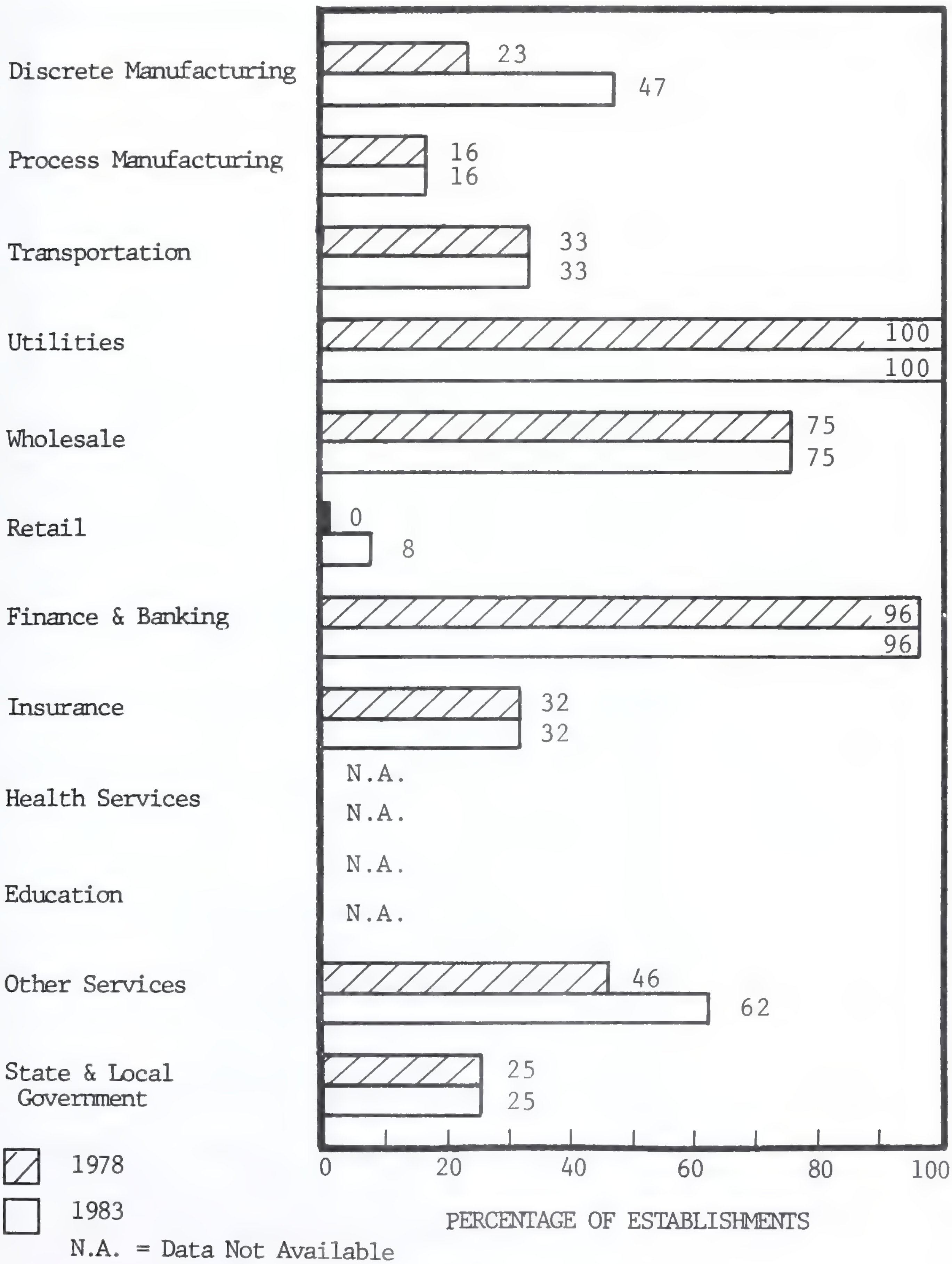


EXHIBIT III-26

USE OF OFFICE AUTOMATION EQUIPMENT IN ESTABLISHMENTS OF 100-499 EMPLOYEES

(BASED ON 244 RESPONDENT ESTABLISHMENTS)

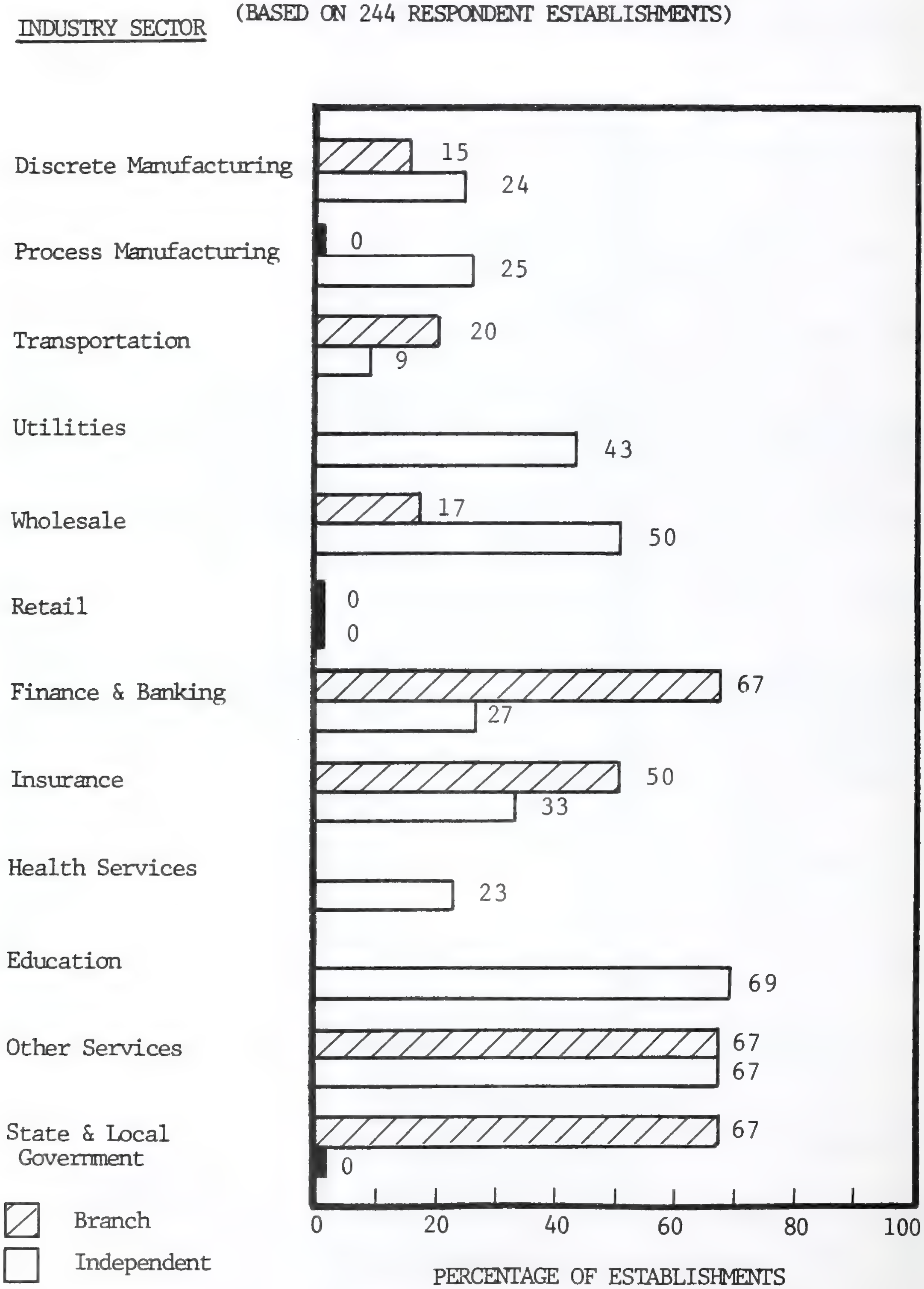


EXHIBIT III-27

USE OF OFFICE AUTOMATION EQUIPMENT IN ESTABLISHMENTS OF 20-99 EMPLOYEES

(BASED ON 219 RESPONDENT ESTABLISHMENTS)

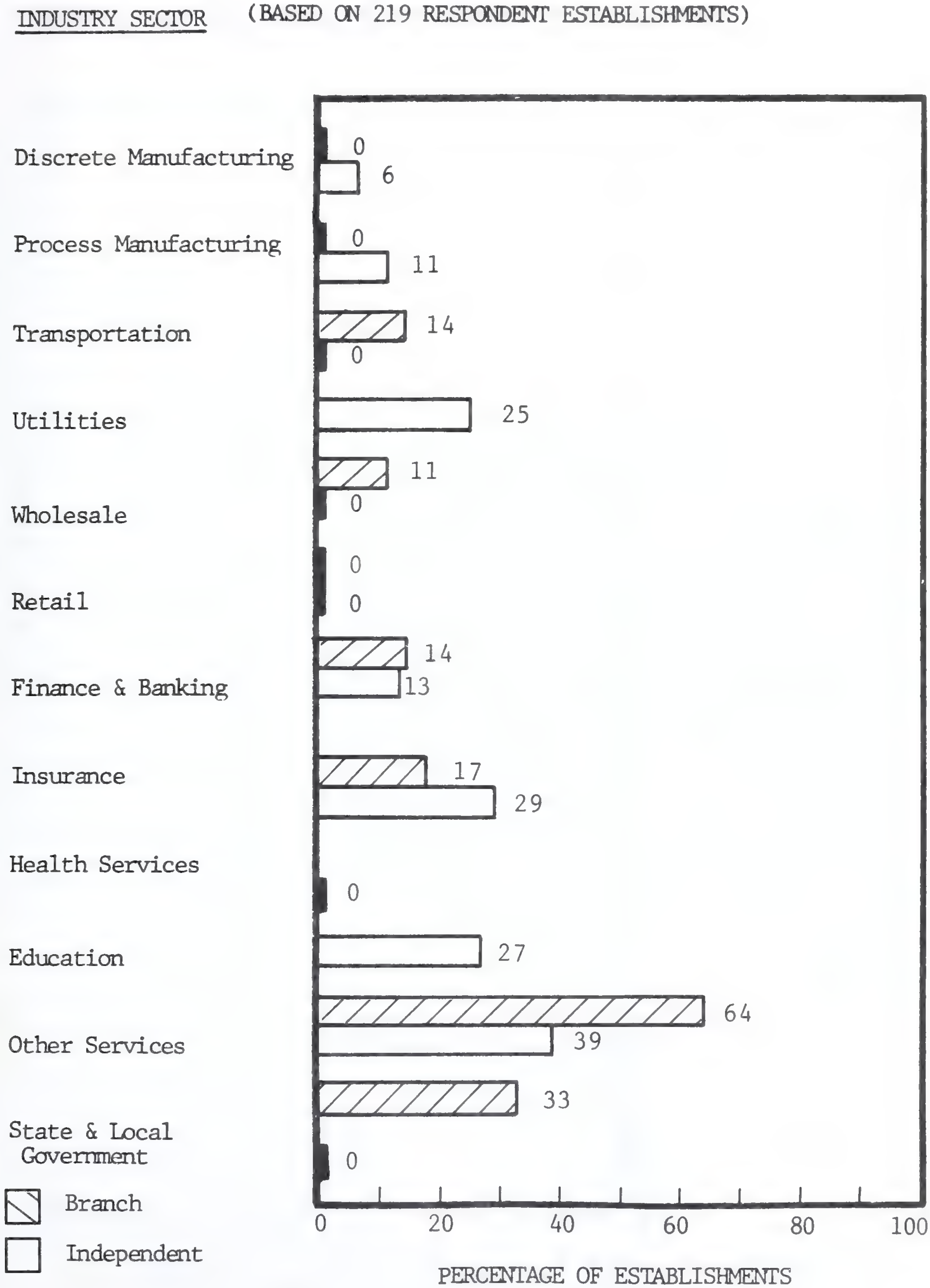


EXHIBIT III-28

USE OF OFFICE AUTOMATION EQUIPMENT IN ESTABLISHMENTS OF 1-19 EMPLOYEES

(BASED ON 122 RESPONDENT ESTABLISHMENTS)

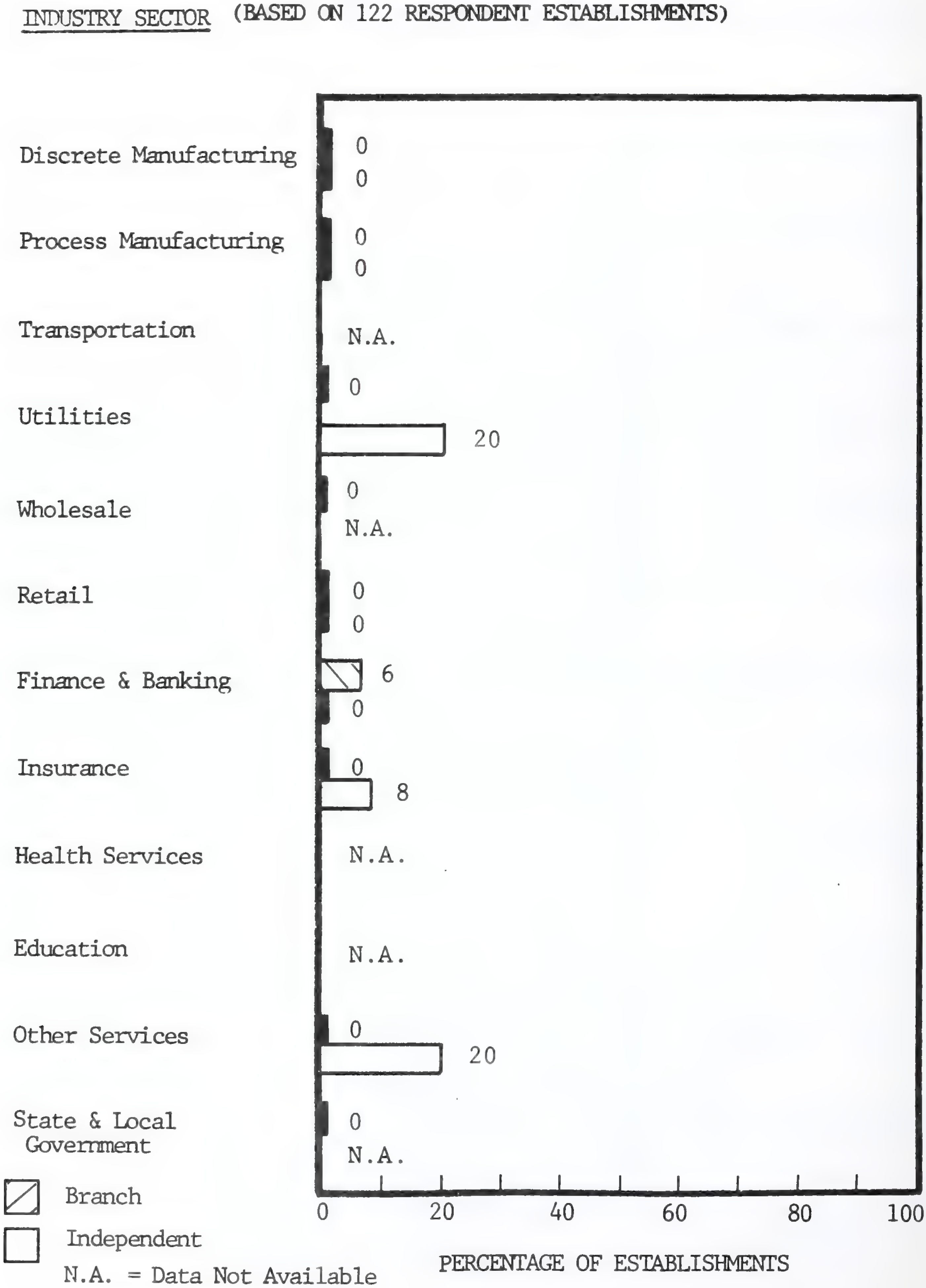


EXHIBIT III-29

USE OF COMMUNICATIONS INTERCONNECT EQUIPMENT
IN ESTABLISHMENTS OF 100-499 EMPLOYEES

INDUSTRY SECTOR (BASED ON 244 RESPONDENT ESTABLISHMENTS)

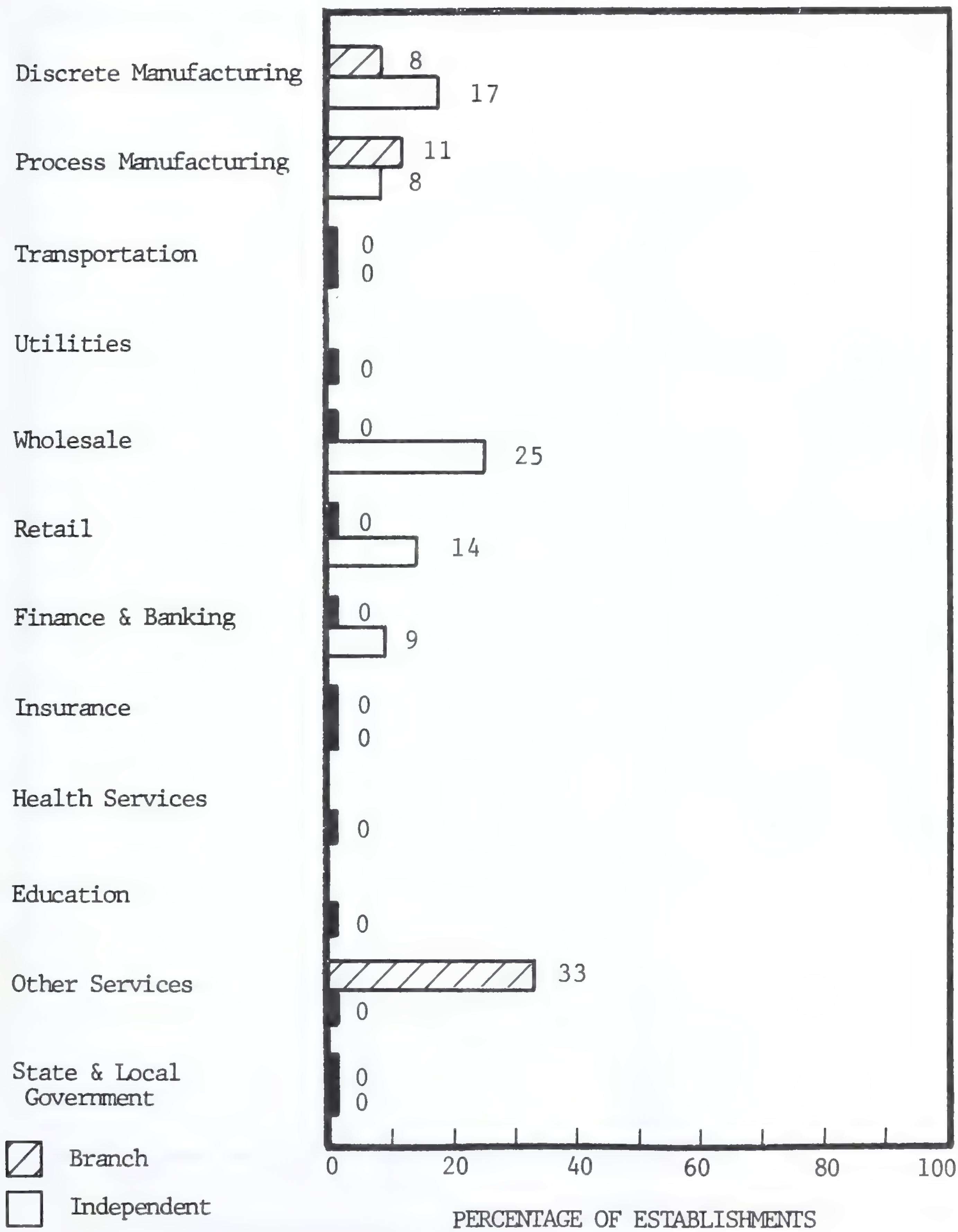


EXHIBIT III-30

USE OF COMMUNICATIONS INTERCONNECT EQUIPMENT
IN ESTABLISHMENTS OF 20-99 EMPLOYEES
(BASED ON 219 RESPONDENT ESTABLISHMENTS)

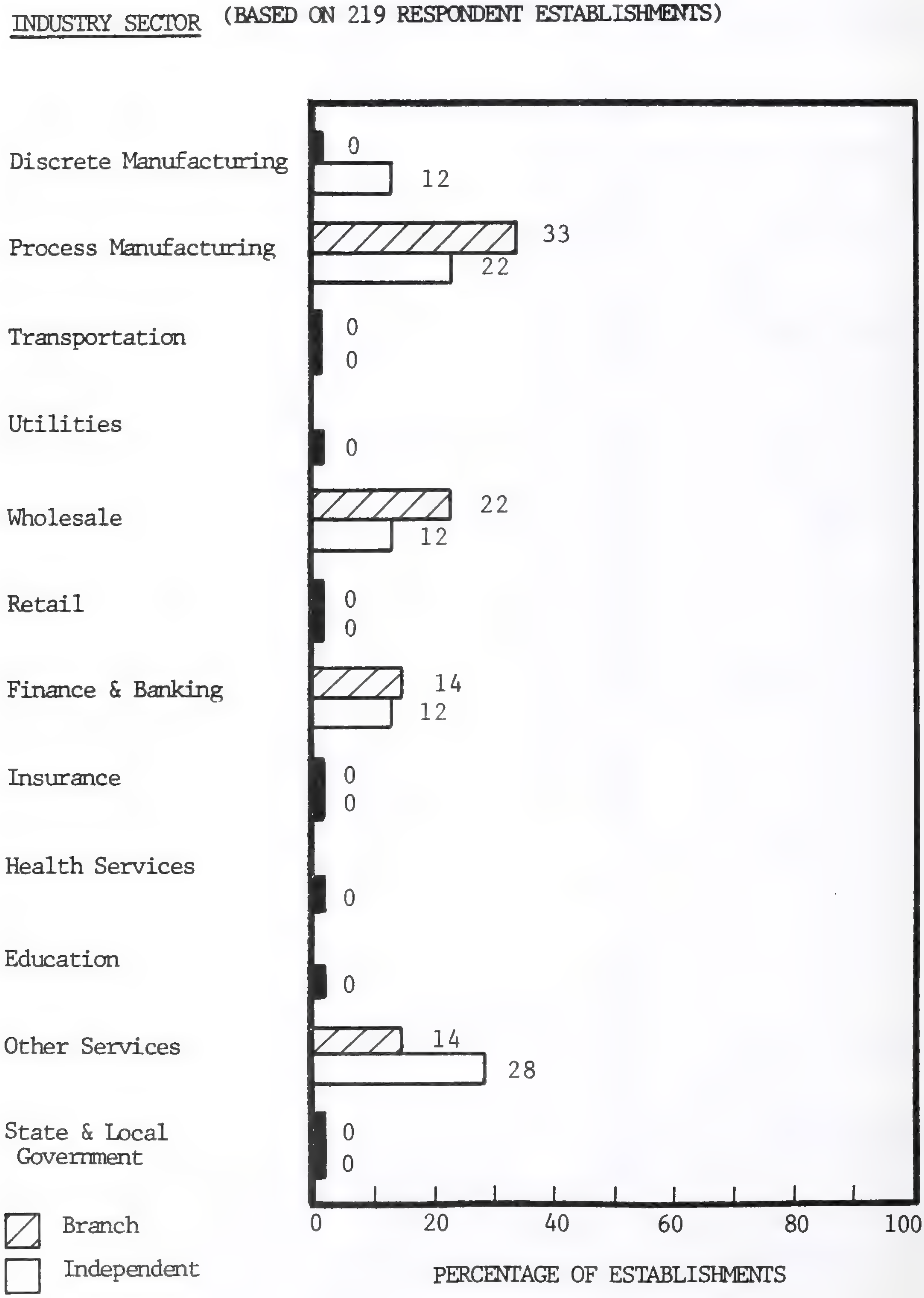
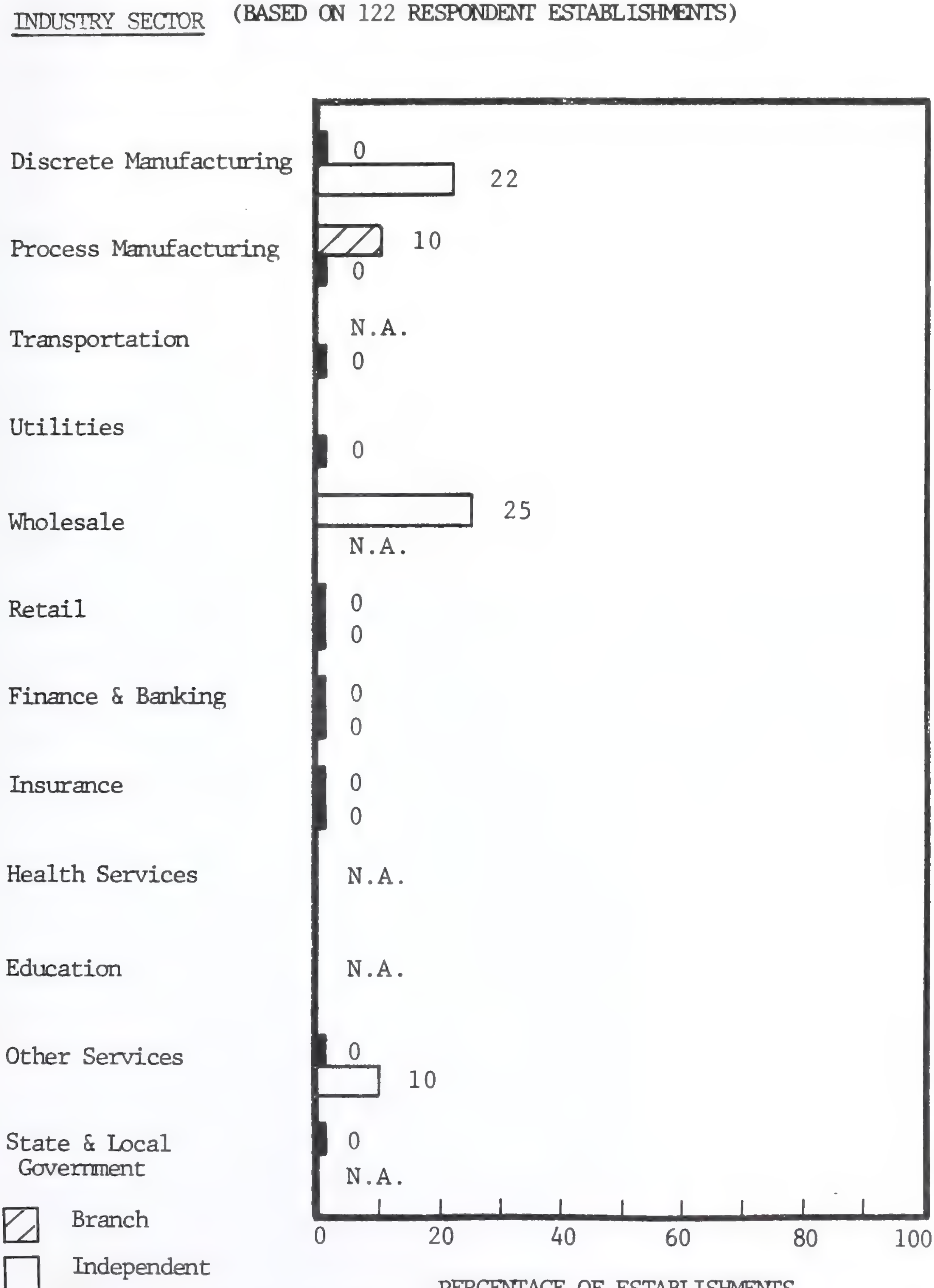


EXHIBIT III-31

USE OF COMMUNICATIONS INTERCONNECT EQUIPMENT IN ESTABLISHMENTS OF 1-19 EMPLOYEES

(BASED ON 122 RESPONDENT ESTABLISHMENTS)



N.A. = Data Not Available

IV VENDOR ANALYSIS

IV VENDOR ANALYSIS

A. VENDORS PROVIDING EQUIPMENT AND SERVICES

- There are a total of several thousand vendors which supply information processing products and services to small establishments in the United States. These vendors range in size from AT&T and IBM, which are the giants of the industry, to companies less than one million dollars in size. This section will discuss these various vendors and the equipment and services which they produce. It will comment upon new and interesting trends in the industry.

  - Well over one hundred vendors supply small business computers and terminals for EDP. About two thirds of them are under $10 million in sales per year. The most significant of these vendors are shown in Exhibit IV-1. Note that (with the exception of AT&T) almost all of the major vendors supply both terminals and small business systems.

  - Exhibit IV-2 shows the largest of the computer services firms. There are a total of 2,800 of these firms (most of which are under $2 million in size) which supply processing services, software products and professional services. Note that CDC (Service Bureau Corporation), ADP, and ITEL are known for the services which they supply to small establishments.

- There are over 30 vendors which sell copiers to small establishments (although well over one half of them provide coated paper copiers only). Text editing also is a popular product with about 30 vendors supplying this equipment. Over half of these vendors supply multi-station (or shared processor) equipment, and most of those vendors also supply computer equipment. Exhibit IV-3 shows the major vendors which supply office equipment (including facsimile for office communications).

  . Of these twenty-five vendors, fourteen (over half) are in the computer or computer services industry including IBM and Xerox.

- The communications equipment and communications services markets are still dominated by AT&T and its subsidiaries. However, there are numerous other companies which have entered the market in the past few years because of the new regulatory decisions. About ten vendors supply PABX and keyset equipment; thirteen others supply facsimile units. Almost forty companies supply teleprinters, although most of those are adaptations of computer output printers. The major suppliers of communications equipment are shown in Exhibit IV-4, and communications services in IV-5.

B. MULTI-MARKET VENDORS

- Exhibit IV-6 lists twenty-four major vendors in the information processing industry which are both leaders of the industry and large enough to make a significant impact upon future developments.

  - If computer equipment and services, office equipment (text editing, copying, and facsimile), and communications equipment and services are considered primary markets, than only five of these vendors are in

only one of the markets. This is a significant factor for all markets. However, it is especially significant for the small establishment market where one central point (top management) is involved in all major purchase decisions.

- The largest of the vendors are in the communications equipment and service market, with AT&T, ITT, and GTE combined responsible for over $50 billion in sales in 1977.

- All of the office equipment vendors are also in the EDP market. This includes Xerox, which sells EDP peripheral equipment and computer services, and Kodak, which sells computer output microfilm equipment.

- All of the vendors are in the EDP market where processing of information was first initiated.

C. SIGNIFICANT TRENDS FOR THE SMALL ESTABLISHMENT MARKET

- The major vendors (Exhibit IV-6) are all following courses of action which will increase the use of information processing equipment and services in small establishments. Because of the leadership position of these vendors and the needs of small establishments for information processing equipment and services, sales to small establishments from all vendors will accelerate.

- The mainframe computer equipment companies (IBM, Burroughs, CDC, Honeywell, NCR, and Univac) all have developed small business systems for small establishments. The three top minicomputer companies (DEC, Data General, and Hewlett-Packard) are actively selling small business computers. Harris, Wang, and MAI are also selling small business computers to small establishments.

- Major office equipment companies (Xerox and 3M) have introduced new smaller copiers for small establishments. This trend was initiated by the offshore plain paper copier manufacturers and United States distributors such as Savin.

- IBM and Exxon have introduced low price, but sophisticated, text-editing equipment which is especially suitable for small establishments.

- AT&T has introduced industry sector specialization into its marketing and product design, and will introduce communications equipment which is designed for small establishments into the market. Interconnect communications equipment will be marketed by the other communications equipment vendors such as ITT and Northern Telecom, both of which have acquired computer equipment companies.

  - The proposed AT&T value added network service communications offering (ACS) is designed to assist small companies in the use of data communications and electronic mail. There will be a long and complex and legal battle before ACS is actually introduced. However, it illustrates the marketing thrust of AT&T.

- New value added communications services from companies such as ITT, Tymnet, Tymshare, and Western Union will make it easier for small companies to use electronic mail and data communications. These new VAN services will increase the use of communications services in small establishments, which in turn will help drive the EDP and office equipment market.

  - The great majority of text editing equipment and small business computers have communications options available.

- Computer service companies such as ADP, ITEL, and National CSS are now distributing EDP equipment as well as EDP services. The industry and software expertise of the computer service companies will ease the problems of small establishments in utilizing EDP equipment.

- ADP, ITEL, and Service Bureau Corporation (CDC) all emphasize small establishments as their markets.

D. MULTI-FUNCTION EQUIPMENT

- Because small establishments have a single buying point (top management) for information processing equipment and services, they are in theory an ideal market for multi-function equipment and services.

  - Interviews with small establishments support this interest. However, they also indicate that the sale will be complex because different administrative functions (office and EDP) are involved, and in many cases an education process will be required.

- There are many actions which major vendors are now taking in the area of multi-function equipment.

  - Key vendors have products which perform both text editing and EDP operations. IBM, Xerox, Burroughs, 3M, DEC, and Wang (among others) have multi-function equipment available now.

  - ITT and Northern Telecom (Bell Canada) have recently acquired EDP equipment companies. The introduction of a PABX which uses its computation capability to perform text editing and EDP functions is a strong possibility. AT&T has regulatory problems which will slow its entry into this area.

  - Xerox and IBM have combined copier technology with digital logic to provide computer output printers. This is the forerunner of other similar products, such as electronic mail terminals which can print text and graphics. This equipment will also perform copier and facsimile functions.

- Tymshare is a leading vendor which is supplying both computer services and communications and message services. Other timesharing companies will follow.

EXHIBIT IV-1

MAJOR VENDORS OF COMPUTER EQUIPMENT

VENDOR	SMALL BUSINESS COMPUTERS	USER PROGRAMMABLE TERMINALS	NON-USER PROGRAMMABLE TERMINALS
AT&T			•
BURROUGHS	•	•	•
CDC	•		•
DATAPOINT	•	•	
DATA GENERAL	•		•
DEC	•		•
FOUR/PHASE	•	•	•
HARRIS	•	•	•
HEWLETT/PACKARD	•		•
HONEYWELL	•	•	•
IBM	•	•	•
ICL	•	•	
ITT			•
LITTON	•		
MAI	•		•
NCR	•		•
NIXDORF	•		
NORTHERN TELCOM	•	•	
OLIVETTI	•		•
PERKIN ELMER	•		•
PRIME	•		
RAYTHEON	•	•	•
UNIVAC	•	•	•
WANG	•	•	•

EXHIBIT IV-2

MAJOR VENDORS OF COMPUTER SERVICES

VENDOR	BATCH PROCES-SING	REMOTE COMPUT-ING	SOFTWARE PRODUCTS	PROFES-SIONAL SERVICES	FACILITIES MANAGE-MENT
ADP	●	●			
ANACOMP		●	●	●	●
APPLIED DATA RES.				●	●
BRADFORD NATIONAL	●	●	●	●	●
CDC	●	●	●	●	
CSC		●		●	●
COMPU-SERV		●			
COMSHARE		●			
DATA RESOURCES	●	●	●	●	
DATA SYSTEMS					
EDS					●
GEIS	●	●		●	●
INFORMATICS		●	●	●	
INSCO SYSTEMS	●	●		●	
ITEL	●	●			
KEYDATA		●			
MARTIN-MARIETTA	●	●	●	●	●
McDONNELL AUTO.	●	●	●	●	●
NATIONAL CSS		●		●	●
ON-LINE SYSTEMS		●		●	●
RAPIDATA		●			
REYNOLDS & REYNOLDS	●	●			
TYMSHARE	●	●	●	●	
UCC	●	●	●		
UCS		●	●		
WESTERN UNION	●	●			●
XEROX COMPUTER SVCS.				●	

EXHIBIT IV-3

MAJOR VENDORS OF OFFICE EQUIPMENT

VENDOR	STAND-ALONE TEXT EDITING	MULTI-STATION TEXT EDITING	PLAIN PAPER COPIERS	FACSIM-ILE	TYPE-WRITERS
A • M	•	•			
A. B. DICK	•		•		
BURROUGHS	•			•	
DEC	•	•			
DENNISON	•	•	•		
EXXON ENTER.	•			•	•
FOUR/PHASE		•			
HARRIS				•	
HONEYWELL	•	•			
IBM	•	•	•		•
KODAK			•		
LANIER	•				
LITTON			•	•	•
3M	•		•	•	
MAI		•			
OLIVETTI	•		•		
PHILLIPS	•				
PITNEY BOWES			•		
RAYTHEON	•				
RICOH	•				
SAVIN	•		•		
SAXON			•		
TOSHIBA					
WANG	•	•			
XEROX	•	•	•	•	

EXHIBIT IV-4

MAJOR SUPPLIERS OF COMMUNICATIONS EQUIPMENT

VENDOR	PABX OR KEYSET	FACSIMILE	TELE-PRINTERS
AT&T	•		
BURROUGHS		•	
CDC			•
CENTRONICS			•
DATA GENERAL			•
DEC			•
EXXON ENTER.		•	•
GTE	•		
HARRIS		•	
ITT	•		•
LITTON		•	
3M		•	
NORTHERN TELECOM	•		
STROMBERG CARLSON	•		
XEROX		•	•

EXHIBIT IV-5

VENDORS OF COMMUNICATIONS SERVICES (DOMESTIC)

VENDOR	DIRECT DIAL	PRIVATE LINE	MESSAGE	VALUE ADDED NETWORK SERVICES
AT&T	•	•		•
CONTINENTAL TELEPHONE	•	•		
GRAPHNET			•	•
GTE	•	•		
ITT		•		•
MCI		•		•
RCA		•		
SPCC		•	•	
TELENET				•
TYMNET			•	•
UNITED TELECOM.	•	•		
WESTERN UNION		•	•	•

EXHIBIT IV-6

THE KEY VENDORS TO WATCH

VENDOR	EDP EQUIP-MENT	EDP EQUIP-MENT	OFFICE TEXT PROCES-SING	COPY-ING OR FACSIM-ILE	COMMUNI-CATIONS EQUIP-MENT	COMMUNI-CATIONS SERV-ICES
ADP	•	•				
AT&T	•				•	•
BURROUGHS	•	•	•	•		
CDC	•	•				
CSC		•				
DATA GENERAL	•					
DEC	•		•			
EXXON	•		•	•		
GTE	•	•			•	•
HARRIS	•		•	•		
HONEYWELL	•	•	•			
IBM	•	•	•			•
ITT	•				•	•
KODAK	•			•		
3M	•		•	•		
MAI	•		•			
NCR	•	•				
NATIONAL CSS	•	•				
NORTHERN TELECOM	•				•	
TYMSHARE		•				•
UNITED TELECOMMUNI-CATIONS		•				•
UNIVAC	•					
WANG	•		•			
XEROX	•	•	•	•		

V INDUSTRY ANALYSIS

A. INTRODUCTION

V INDUSTRY ANALYSIS

A. INTRODUCTION

- In order to present a comprehensive overview of the small establishment market in all of the important economic sectors, representative component industries have been chosen and interviewed in each sector. These sectors and their representatives are:

  - Discrete Manufacturing: Fabricated Metal Products (SIC 34).
  - Process Manufacturing: Chemicals And Allied Products (SIC 28).
  - Transportation: Motor Freight And Warehousing (SIC 42).
  - Utilities: Electric, Gas, And Sanitary Services (SIC 49).
  - Merchant Wholesale: Durable Goods Wholesale (SIC 50).
  - Retail Trade: General Merchandise Stores (SIC 53).
  - Finance And Banking: Banking (SIC 60).
  - Insurance: Insurance Carriers (SIC 63).

- Health Services: Hospitals (SIC 806).

- Educational Services: Colleges And Universities (SIC 822).

- "Other Services": Accounting, Auditing, And Bookkeeping (SIC 893).

- "State And Local Government": The same, excluding school districts (parts of SIC 91, 92, 93, 94, 95, 96).

• Analysis was performed and is presented separately for branches of Fortune 500/Fortune 50 firms, and for independent firms, with the following exceptions:

  - Only independent firms were analyzed in the Utilities, Health Services, and Educational Services sectors.

  - In the "Other Services" sector, branches of the "Big Eight" accounting firms were analyzed separately from independent accounting firms.

  - In the "State and Local Government" sector, branches of state governments were analyzed separately from independent local governments.

• Basic demographic data has been compiled predominantly from the most recent United States Government census and other federal sources, supplemented by other sources identified in Appendix A. Since many of these data are from 1975, they have been brought up to date when necessary, based on other studies done by INPUT and on the interview program conducted for this report as shown in Appendix B.

• Each sector is discussed in depth in the following sections.

B. DISCRETE MANUFACTURING

B. DISCRETE MANUFACTURING

1. INDUSTRY CHARACTERISTICS

- The discrete manufacturing industry sector ranks above average in the number of small establishments that currently use and desire more automated equipment and services. Penetration of computer equipment and services, as well as the use of communications interconnect equipment, is also above average; but the use of word processing equipment is only average or below. Further needs for equipment and services have been expressed by more than 40 percent of all respondents.

- The discrete manufacturing sector is comprised almost entirely of small establishments (see Exhibit V-1). Over 190,000 establishments, more than 98 percent of all establishments in the discrete manufacturing sector, have less than 500 employees, and altogether employ 5.35 million people. The industries contained in the discrete manufacturing sector are:

  - Apparel (SIC 23).
  - Furniture (SIC 25).
  - Publishing and printing (SIC 27).
  - Leather (SIC 31).
  - Fabricated metal products (SIC 34).
  - Non-electric equipment (SIC 35).
  - Electric equipment (SIC 36).

- Transportation equipment (SIC 37).

- Instruments (SIC 38).

- Miscellaneous manufacturing (SIC 39).

- Small establishments of the discrete manufacturing sector spend $4.4 billion annually on equipment and services, including:

  - EDP equipment.

  - EDP services.

  - Office equipment.

  - Communications equipment.

  - Communications services.

  - Supplies.

- The industry subsector which is the focus of this section is the fabricated metal products industry (SIC 34). The fabricated metal products industry follows the general trends found in the discrete manufacturing sector.

  - Fewer than 2 percent of all establishments have more than 500 employees; many of these are branches of Fortune 500 firms.

- There are strong regional concentrations in the fabricated metal products industry, as shown in Exhibit V-2. Over 25 percent of the total United States industry is centered in Illinois, Indiana, Michigan, and Ohio. This pattern is similar to the entire discrete manufacturing sector.

- Twenty-three enterprises in the fabricated metal products industry are among the 500 largest industrial companies in the nation (see Exhibit V-3). These firms in total have more than 4,000 branches, most of which have fewer than 500 employees.

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

- Over half of all establishments use EDP equipment. There are few differences between branch and independent locations (see Exhibit V-4). Even among the smallest employee-size category, a significant percentage (25-33 percent) of establishments report that they have EDP equipment installed.

- Approximately one-fourth of all respondents used computer services, with independents as usual reporting somewhat more reliance than branches on the use of outside computer services (see Exhibits V-5 and V-6). However, this is one of only five sectors where large branches report that they use non-corporate-owned facilities.

- Almost half of all independents reported that they are using or would consider using computer services, or were undecided.

- EDP penetration in the fabricated metal products industry averages over 75 percent (see Exhibit V-7), ranging from 41 percent of respondents from establishments with less than 20 employees to 80 percent of respondents from establishments with more than 100 employees who use EDP equipment or services.

- There is some acceptance of automated office equipment in establishments with more than 100 employees; but this sector is not a primary user of word processing equipment (see Exhibit V-8). Independent establishments outrank branch locations in their usage of automated office equipment.

- More than 38 percent of respondents used on-premises switching equipment (keyset or PABX - see Exhibit V-9).

- Almost half of all respondents report usage of communications services other than DDD, but between branches and independents there are wide disparities (see Exhibit V-10). For example, 90 percent of branch locations used WATS lines, but only 56 percent of respondents from independent establishments had WATS lines installed. Branch respondents rank higher than independents in their use of each type of communications service.

- Most respondents stated use of telephone company-supplied equipment, but independent respondents in all size categories, as well as the largest branch respondents, used interconnect communications equipment (see Exhibit V-11).

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-12, V-13,and V-14 show that respondents use EDP more for financial/administrative functions than for sales/marketing functions or for industry specific functions.

  - About twice as many of the smallest establishments (47 percent) used EDP for financial/administrative functions as for sales/marketing or for industry specific functions (23 percent).

  - By 1983, based on respondent expectations, 59 percent of the smallest respondent establishments will be using EDP for financial/administrative functions, and 47 percent of respondents will be using EDP for industry specific applications. Additional EDP applications are planned in all sizes of establishments.

- Fabricated metal products establishments used EDP heavily for administrative applications (see Exhibit V-15):

  - Fifty-three to seventy-two percent of independent locations were using EDP for payroll, billing, accounts receivable, accounts payable, general ledger. By 1985, over 75 percent of independent establishments will be using EDP for all administrative applications.

  - Fifty-five to sixty-nine percent of branch locations were using EDP for administrative applications.

- Nevertheless, for smaller establishments the fabricated metal products industry is average or below average in its automation of administrative functions:

  - At most 25-33 percent of both branch and independent locations with less than 20 employees used EDP for some administrative applications (see Exhibits V-16 and V-17).

- A much greater potential impact for small establishments will come from automating the production functions.

  - Reductions in inventory holding costs and organized labor costs offer much greater potential savings than reduction in office costs.

  - Thirty-one percent of independent respondents expect to be automating inventory control, in addition to the 37 percent automated now; and 17 percent of branch respondents expect to automate this application, in addition to the 52 percent automated now (see Exhibit V-18).

- There is little current use of EDP for industry specific applications in establishments with less than 20 employees (see Exhibit V-19 and V-20). In fact, the "automation line" is roughly at 100 employees. However, up to 25 percent of independents, and up to 44 percent of branches in the lowest size

range expect to automate additional industry specific applications in the next five years.

4. EDP, OFFICE AND COMMUNICATION NEEDS

- In the fabricated metal products industry, about half of all respondents stated that they have further needs for EDP, office, and communications equipment and services (see Exhibit V-21).

  - Fifty-nine percent of respondents expressed further EDP needs.

  - Forty-six percent of respondents expressed further office needs.

  - Forty-one percent of respondents expressed further communications needs.

- EDP needs were expressed predominantly by large establishments and related to better coordination of information, improved efficiency and cost effective control of production. Included were the following specific plans or desires:

  - "Total corporate data base."

  - "Terminal tie-in to master computer."

  - "Refine manufacturing applications."

  - "Typewriter-type terminal for programming, typing, forms printing, and forms completion."

- Office and communications needs relating primarily to increased capacity and lower cost of operations were expressed by more than 40 percent of respondents. Some specific needs expressed were:

  - "A new system to accommodate needed text/word processing."

- "Increased capacity for switching."

- "Alternative method of data transmittal."

5. EXPENDITURES

- Expenditures for EDP, office, and communications equipment and services total over \$4.4 billion annually in the discrete manufacturing sector, as shown in Exhibits V-22 and V-23. This expenditure total ranks third among all sectors included in this report, while the rate of expenditure ranks sixth.

  - Annual expenditures for EDP equipment, services, and supplies exceeded \$1.0 billion or \$220 per employee.

  - Annual expenditures for office equipment were \$936 million or \$157 per employee.

  - Annual expenditures for communications equipment and services were \$2.4 billion or \$409 per employee.

EXHIBIT V-1

STRUCTURE OF DISCRETE MANUFACTURING & FABRICATED METAL PRODUCTS INDUSTRIES (BY SIZE OF ESTABLISHMENT, 1975)

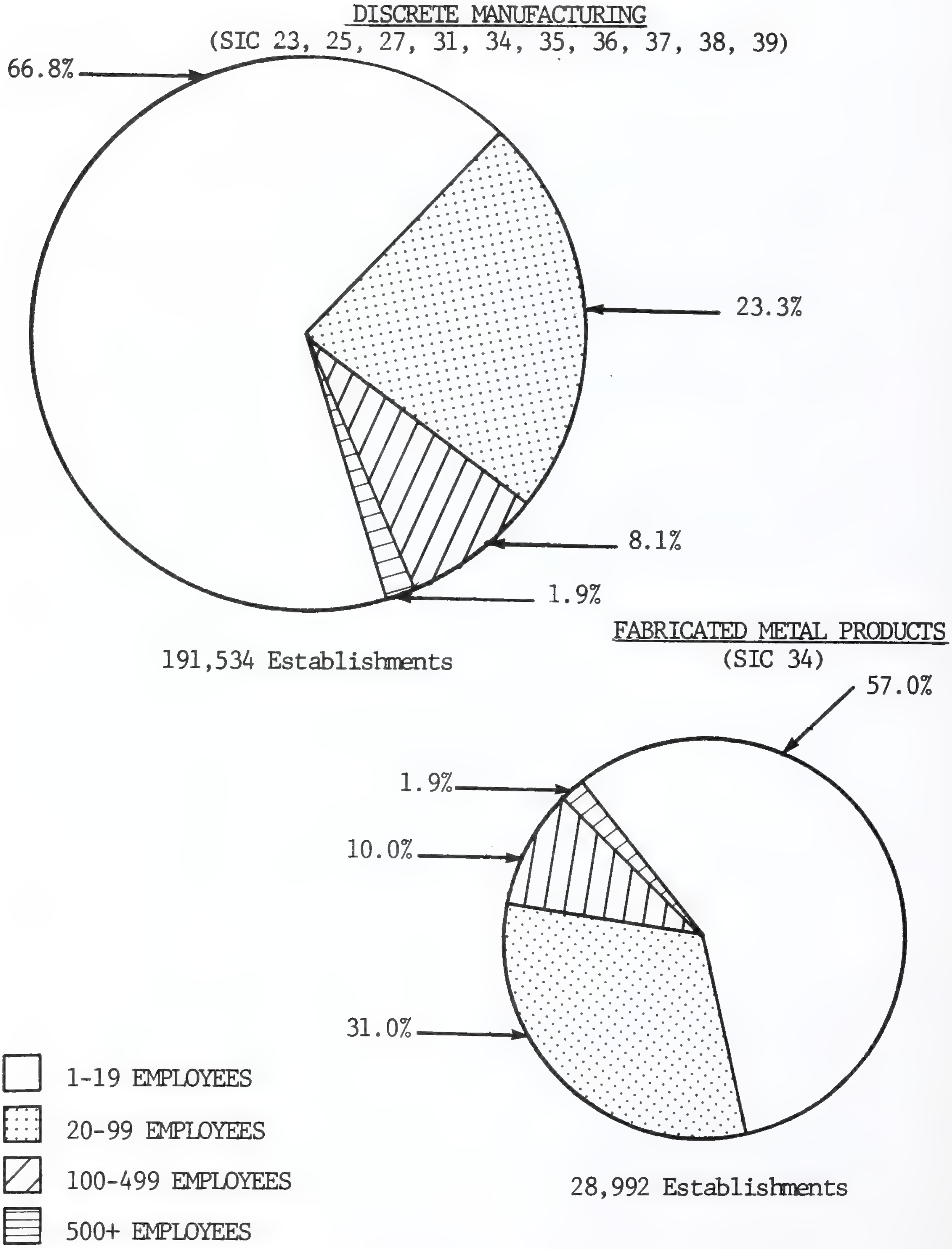


EXHIBIT V-2

DISTRIBUTION OF FABRICATED METAL PRODUCTS ESTABLISHMENTS (BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	342	1.2%	MT	33	0.1%
AK	10	0.0	NE	101	0.4
AZ	194	0.7	NV	27	0.1
AR	182	0.6	NH	99	0.4
CA	3592	12.6	NJ	1406	4.9
CO	247	0.9	NM	41	0.1
CT	864	3.0	NY	2312	8.1
DE	37	0.1	NC	376	1.3
DC	18	0.0	ND	23	0.1
FL	775	2.7	OH	2090	7.4
GA	381	1.3	OK	362	1.3
HI	27	0.1	OR	279	1.0
ID	50	0.2	PA	1736	6.1
IL	2384	8.4	RI	361	1.3
IN	797	2.8	SC	175	0.6
IA	246	0.9	SD	32	0.1
KS	228	0.8	TN	404	1.4
KY	252	0.9	TX	1432	5.0
LA	220	0.8	UT	130	0.5
ME	67	0.2	VT	32	0.1
MD	270	1.0	VA	241	0.8
MA	1099	3.9	WA	357	1.3
MI	2145	7.5	WV	108	0.4
MN	482	1.7	WI	714	2.5
MS	119	0.4	WY	18	0.1
MO	542	1.9			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				28,459	100.0%

EXHIBIT V-3

NUMBER OF "FORTUNE 500" COMPANIES CLASSIFIED AS PRIMARILY DISCRETE MANUFACTURING FIRMS

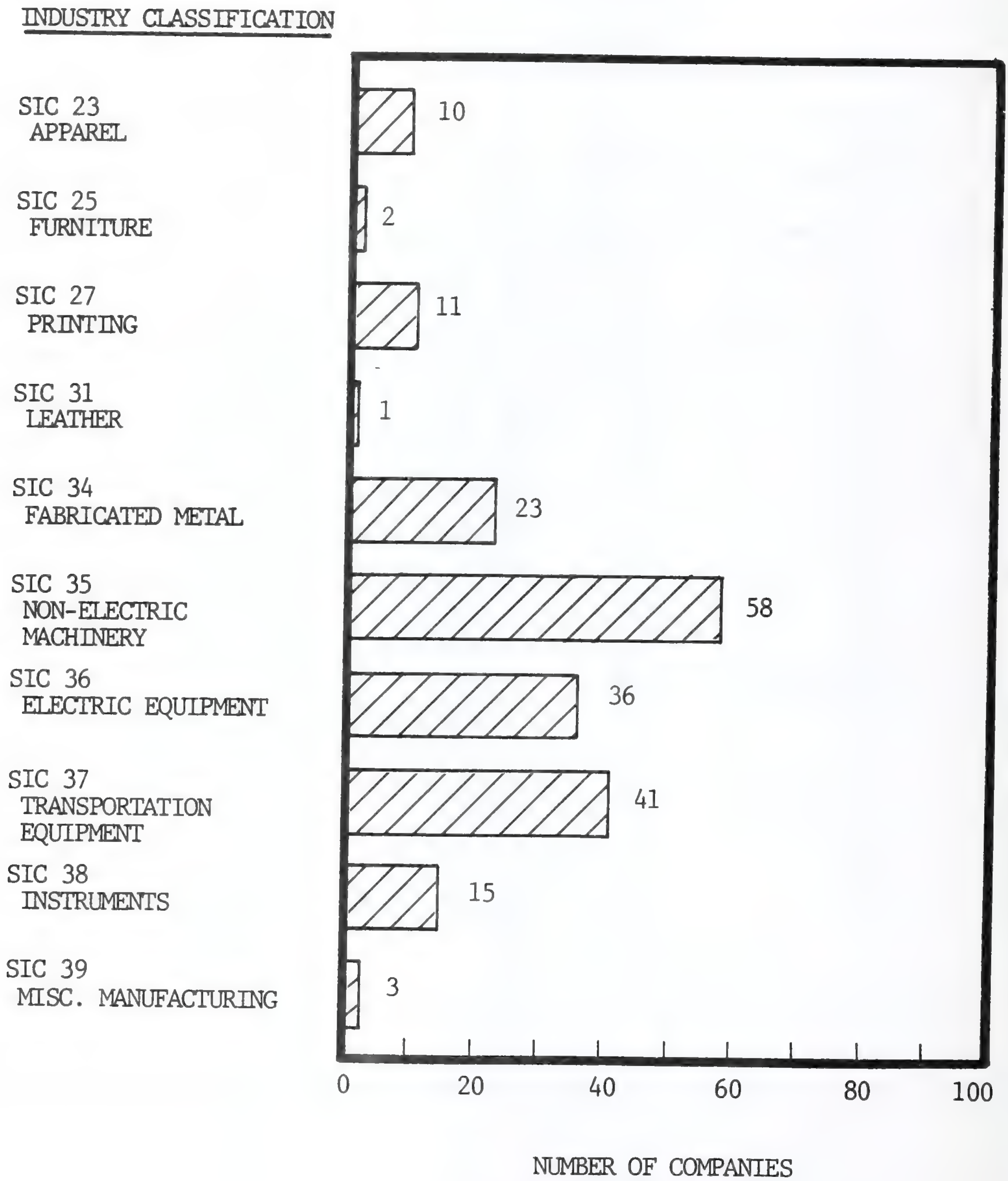


EXHIBIT V-4

FABRICATED METAL PRODUCTS: EDP EQUIPMENT INSTALLED

(BY TYPE AND SIZE OF ESTABLISHMENT)

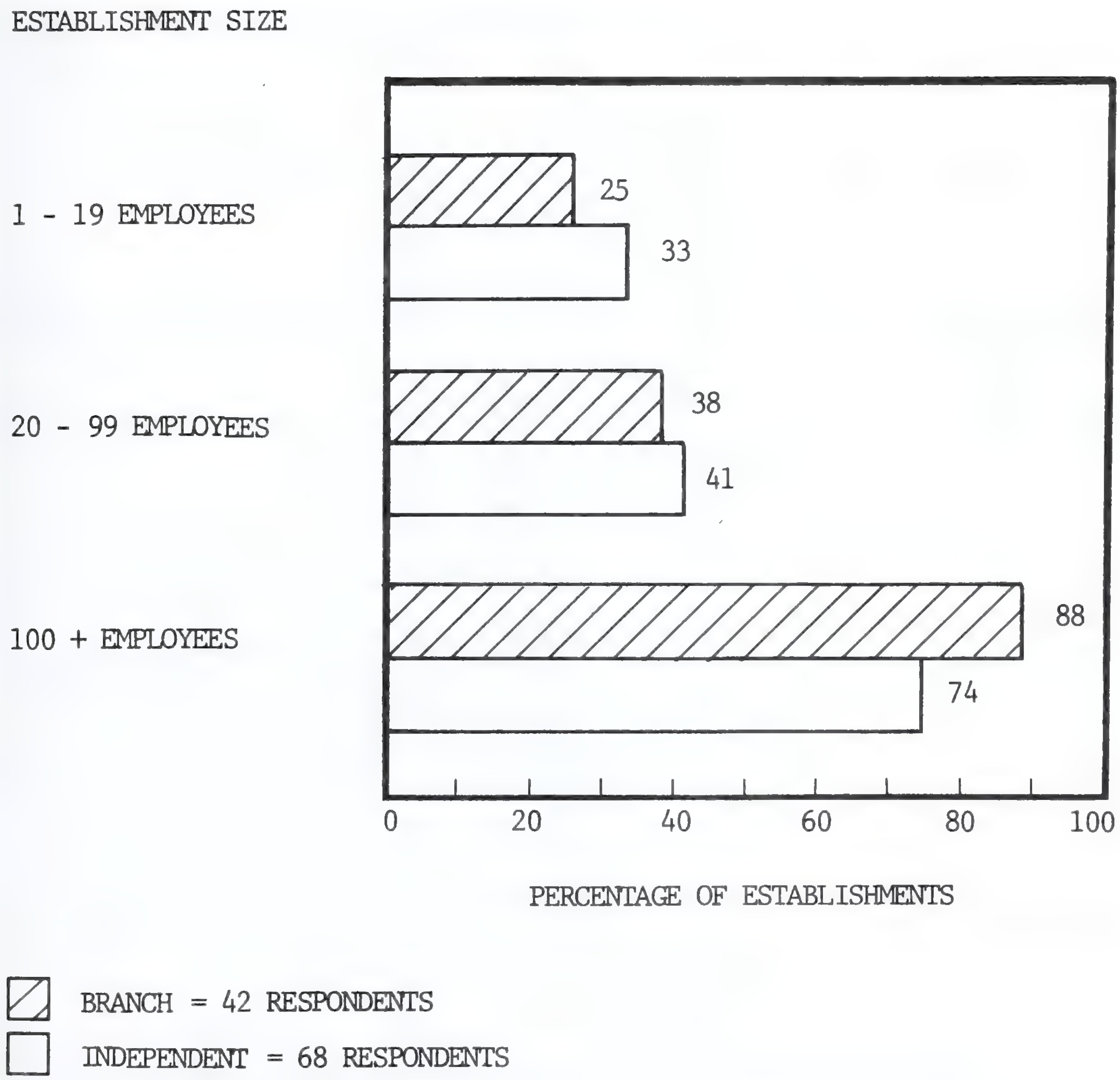


EXHIBIT V-5

FABRICATED METAL PRODUCTS:

USE OF COMPUTER SERVICES - BRANCHES

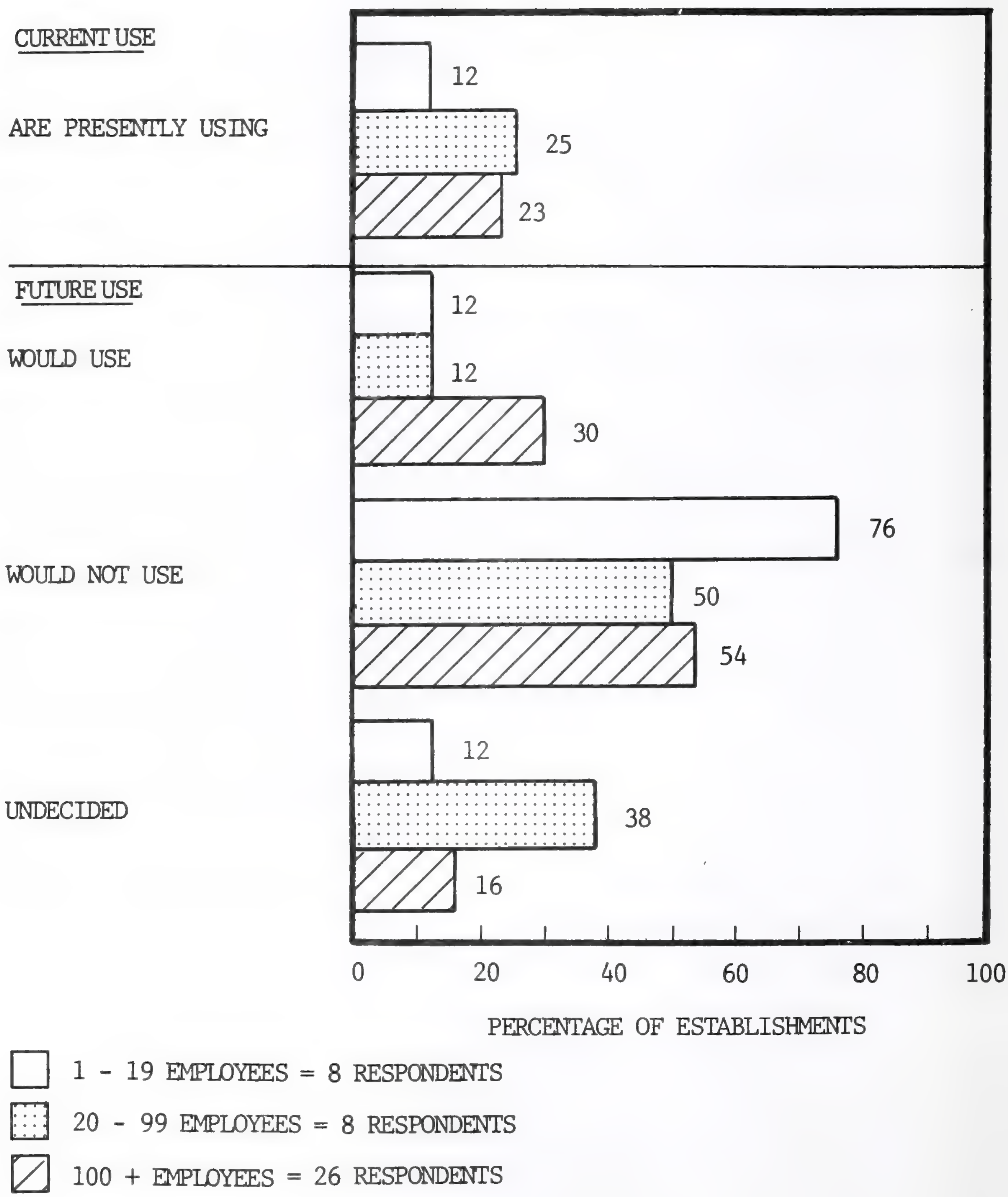


EXHIBIT V-6

FABRICATED METAL PRODUCTS:

USE OF COMPUTER SERVICES - INDEPENDENTS

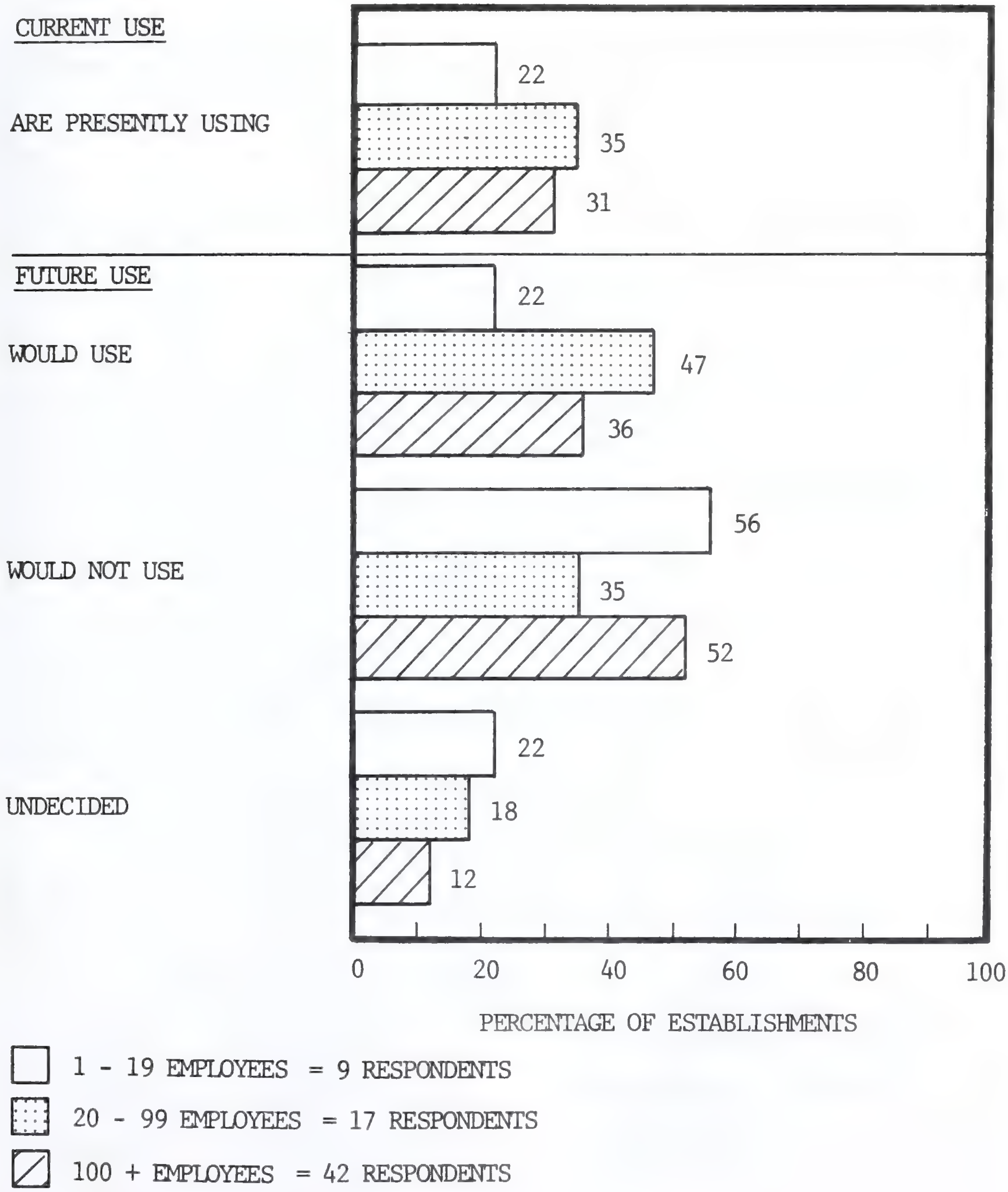


EXHIBIT V-7

FABRICATED METAL PRODUCTS: PERCENTAGE OF USERS OF COMPUTER EQUIPMENT OR SERVICES OR BOTH (BY SIZE OF ESTABLISHMENT)

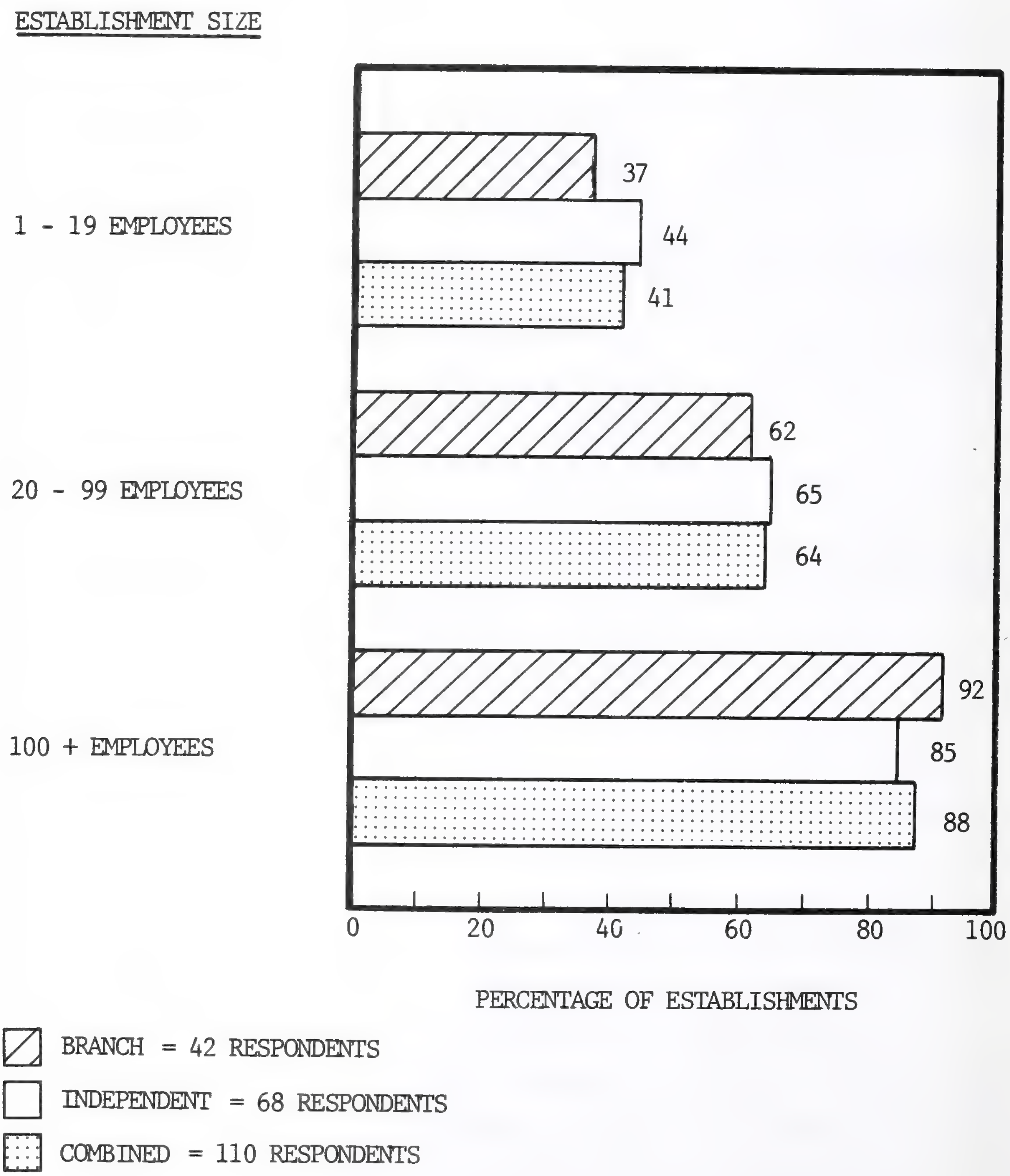


EXHIBIT V-8

FABRICATED METAL PRODUCTS: USERS OF OFFICE AUTOMATION

(BY SIZE OF ESTABLISHMENT)

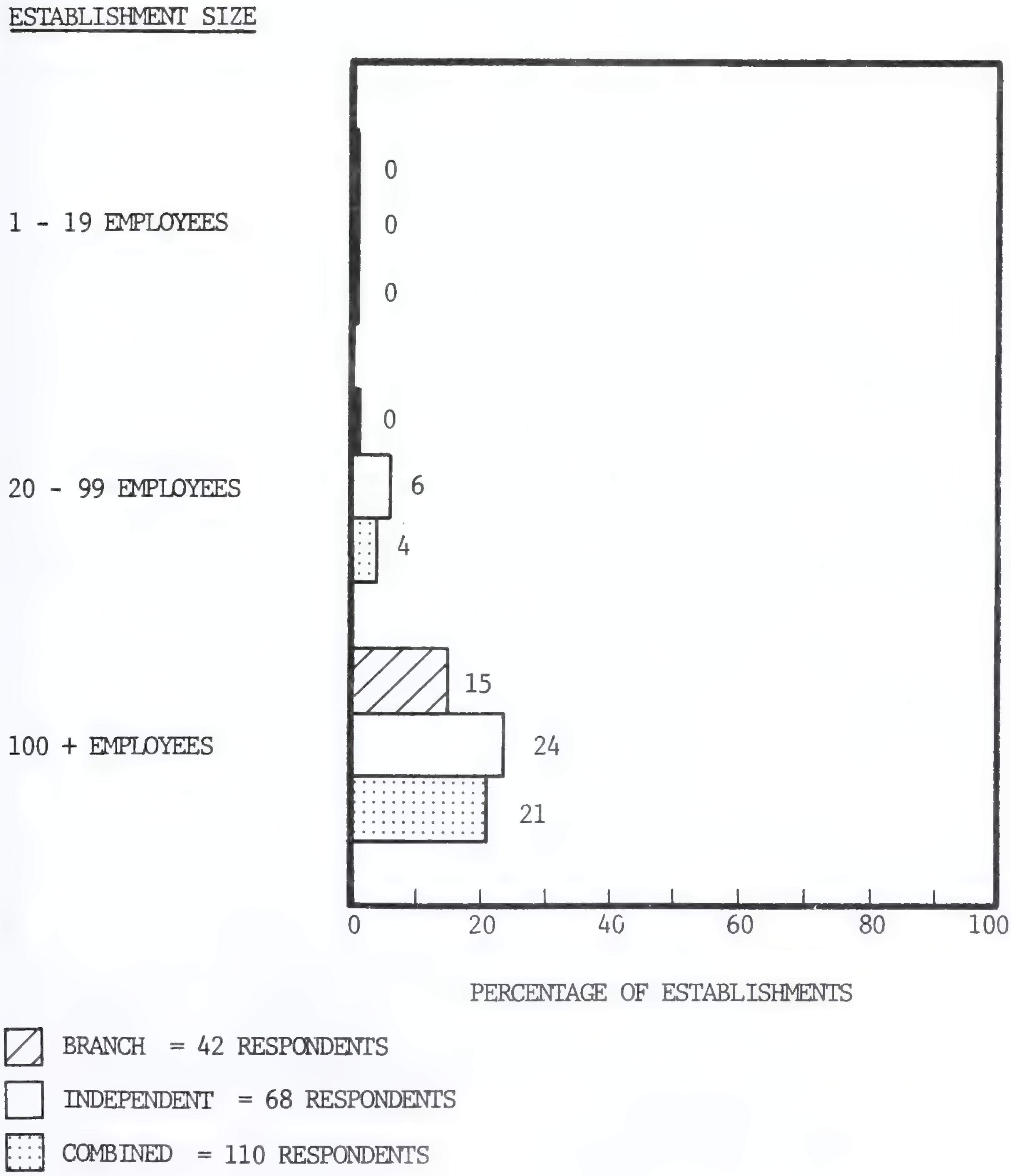


EXHIBIT V-9

FABRICATED METAL PRODUCTS: COMMUNICATIONS EQUIPMENT

INSTALLED - BRANCHES AND INDEPENDENTS

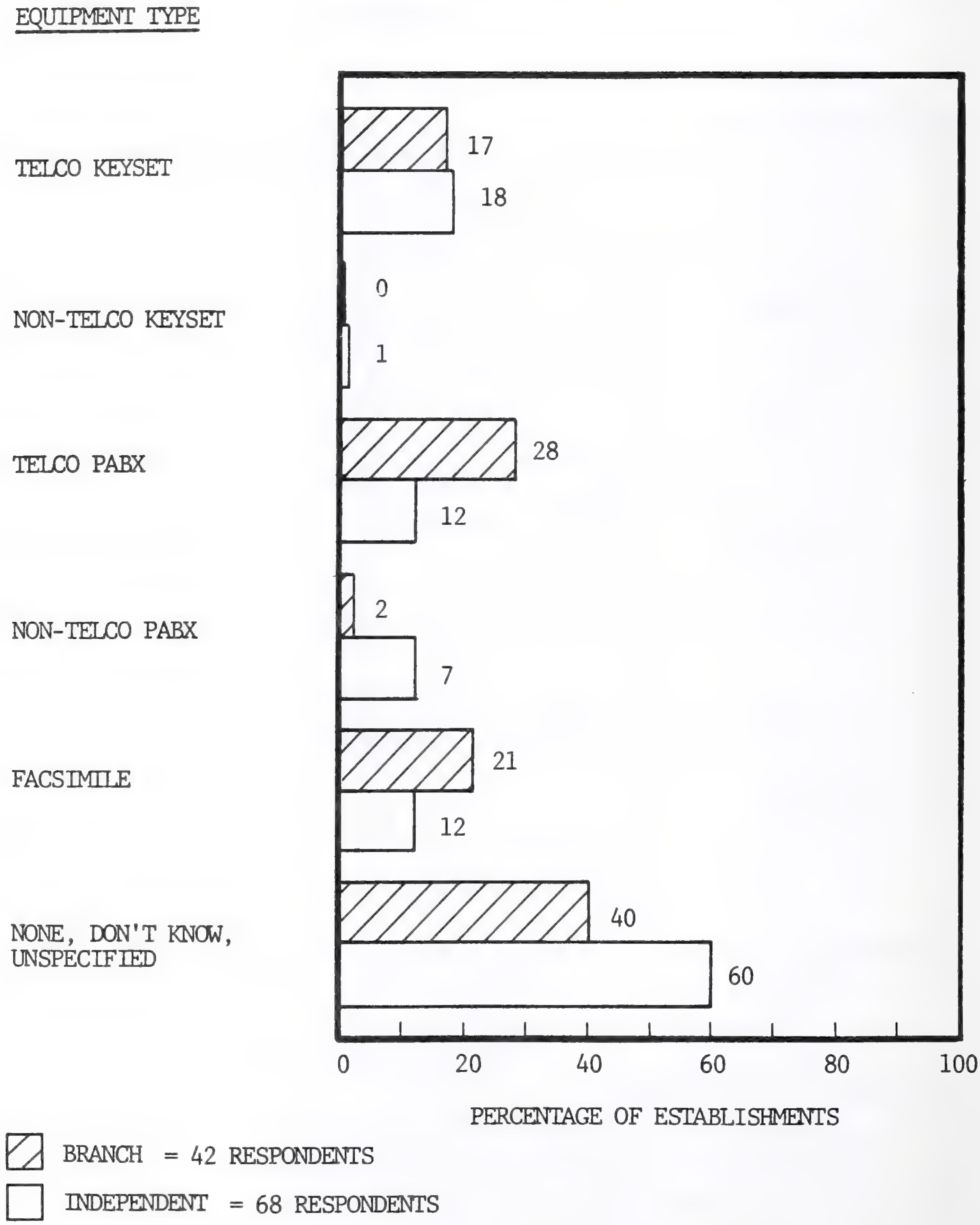


EXHIBIT V-10

FABRICATED METAL PRODUCTS: COMMUNICATIONS SERVICES INSTALLED - BRANCHES AND INDEPENDENTS

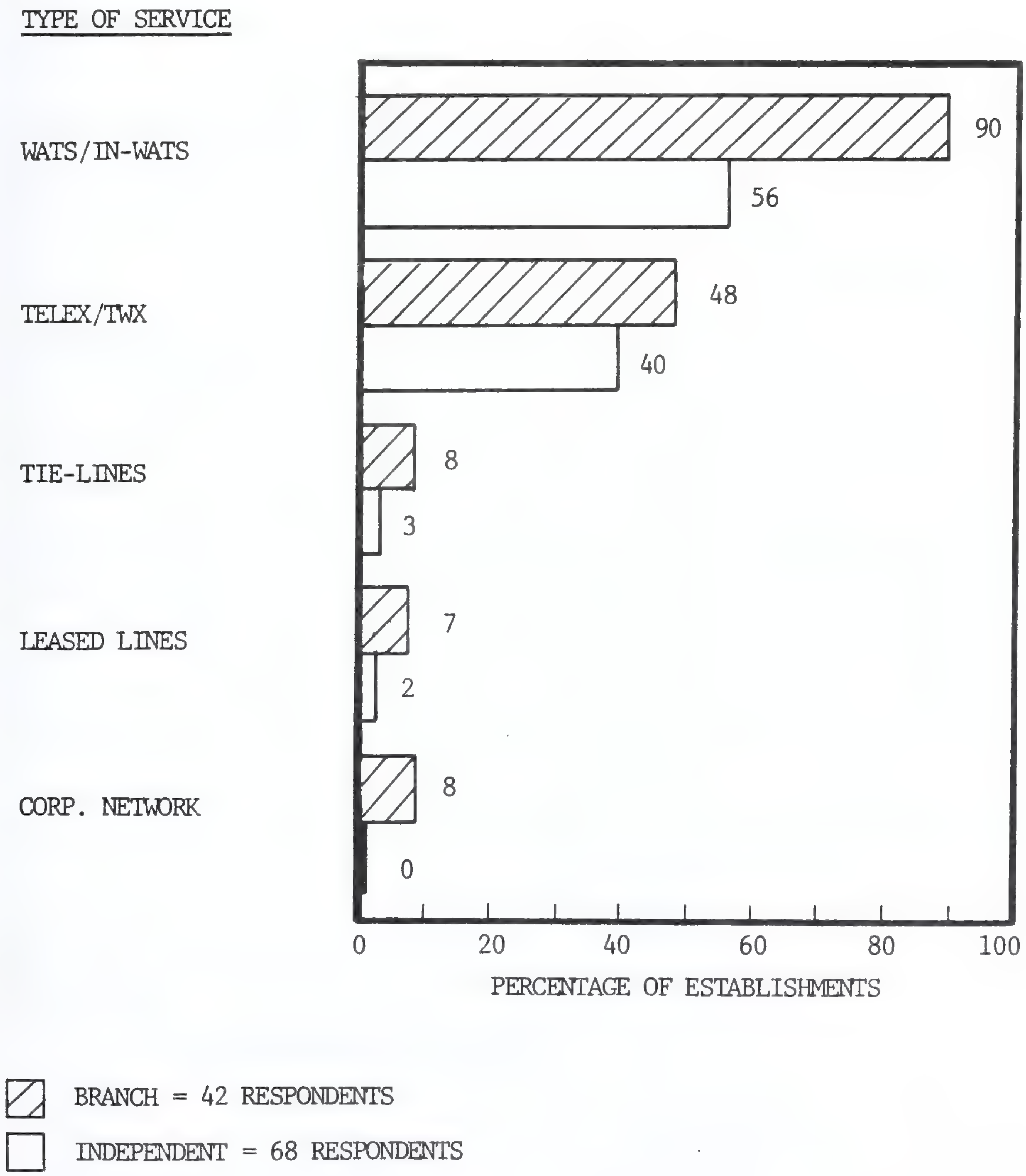


EXHIBIT V-11

FABRICATED METAL PRODUCTS: USERS OF NON-TELCO COMMUNICATIONS EQUIPMENT/SERVICES (BY SIZE OF ESTABLISHMENT)

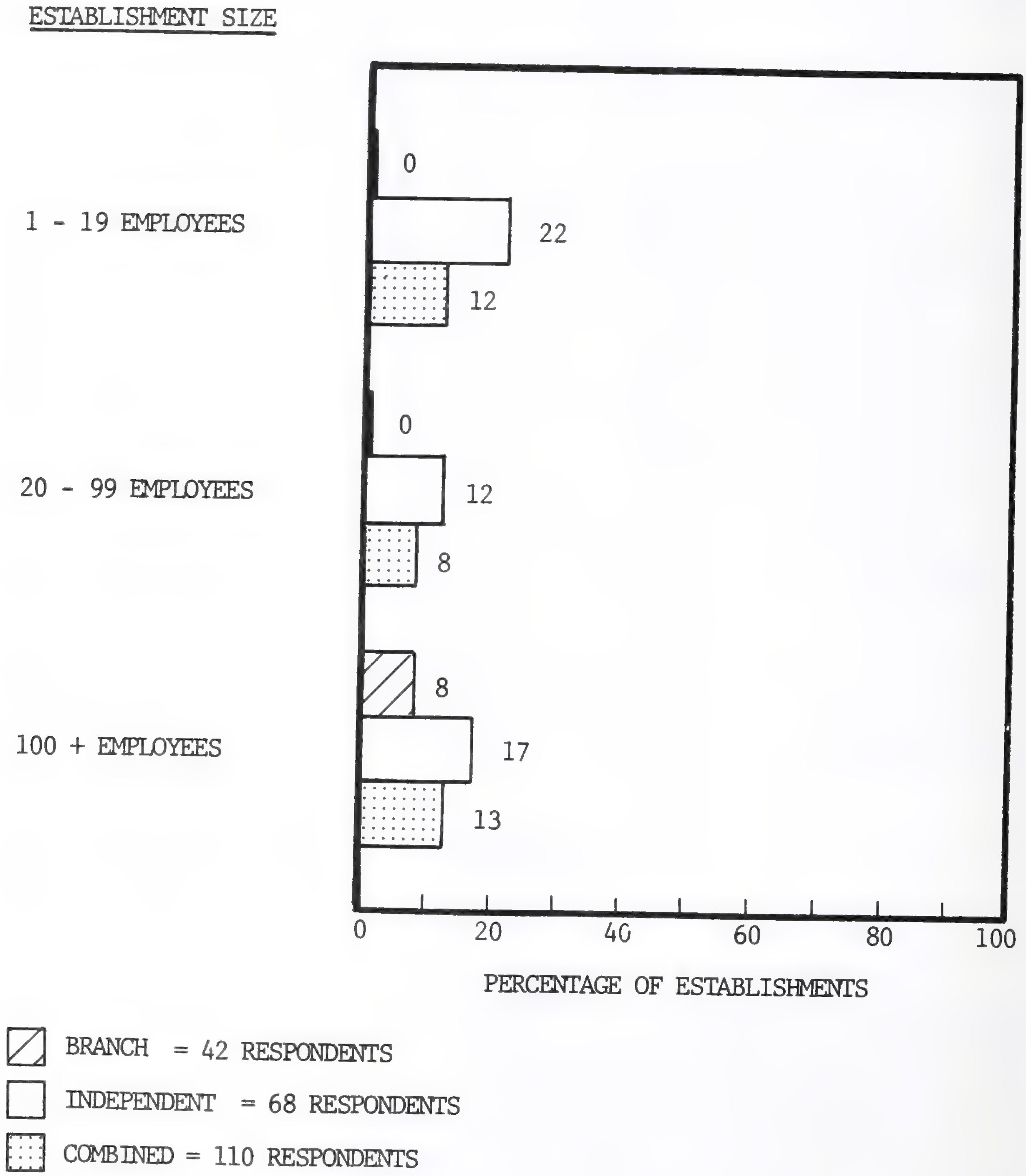


EXHIBIT V-12

FABRICATED METAL PRODUCTS: USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

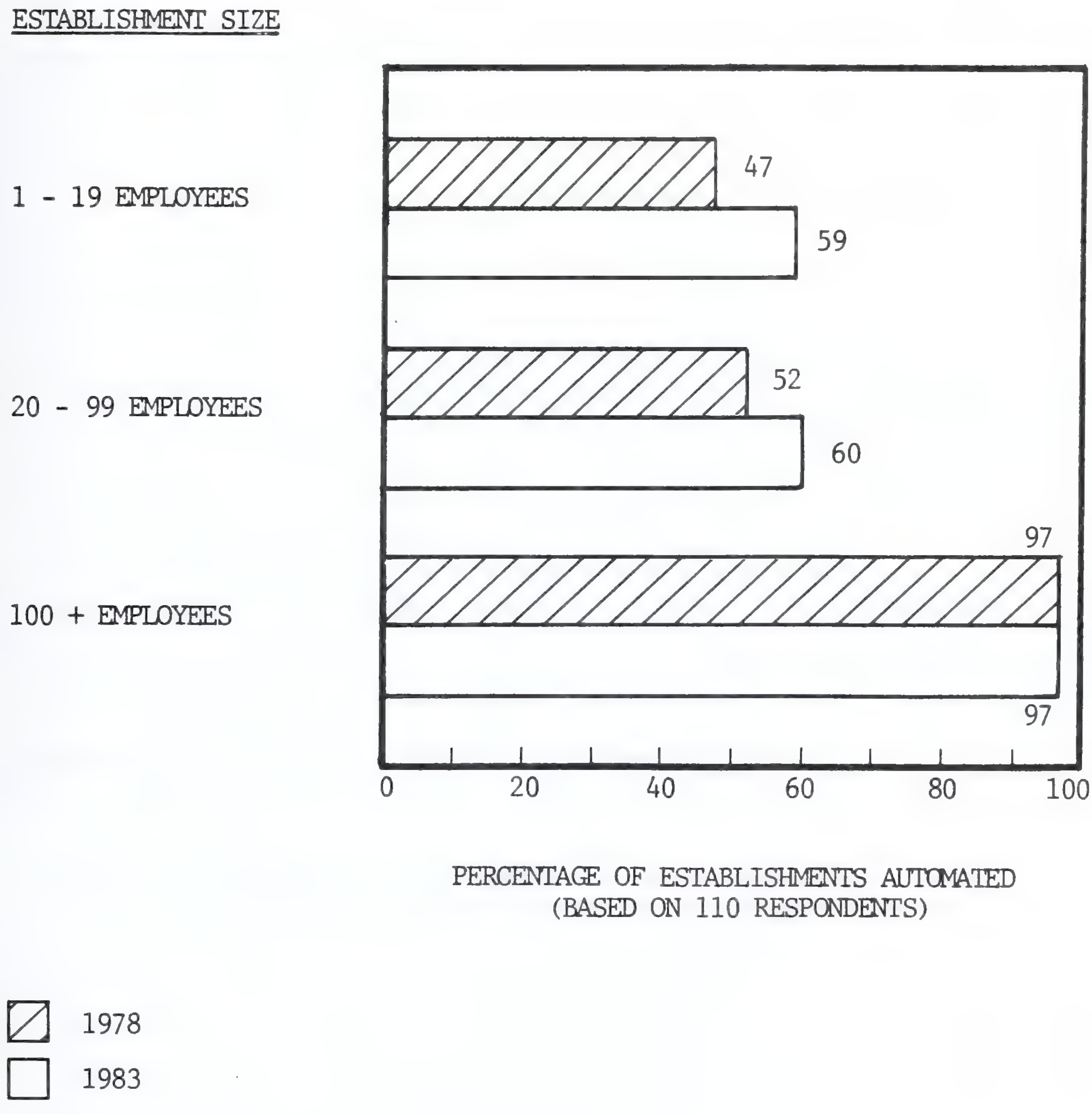


EXHIBIT V-13

FABRICATED METAL PRODUCTS: USE OF EDP FOR SALES/MARKETING FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

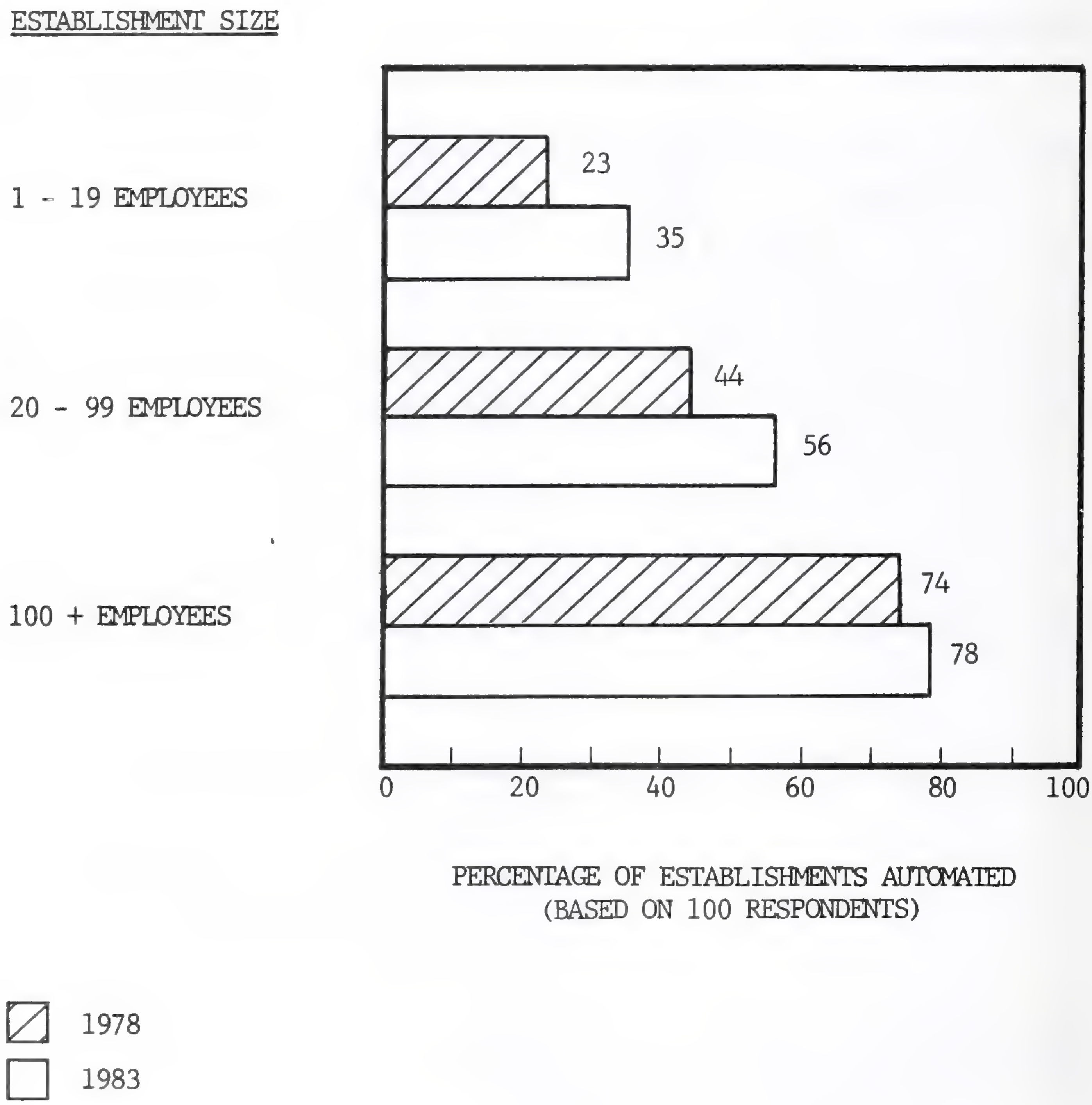


EXHIBIT V-14

FABRICATED METAL PRODUCTS: USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

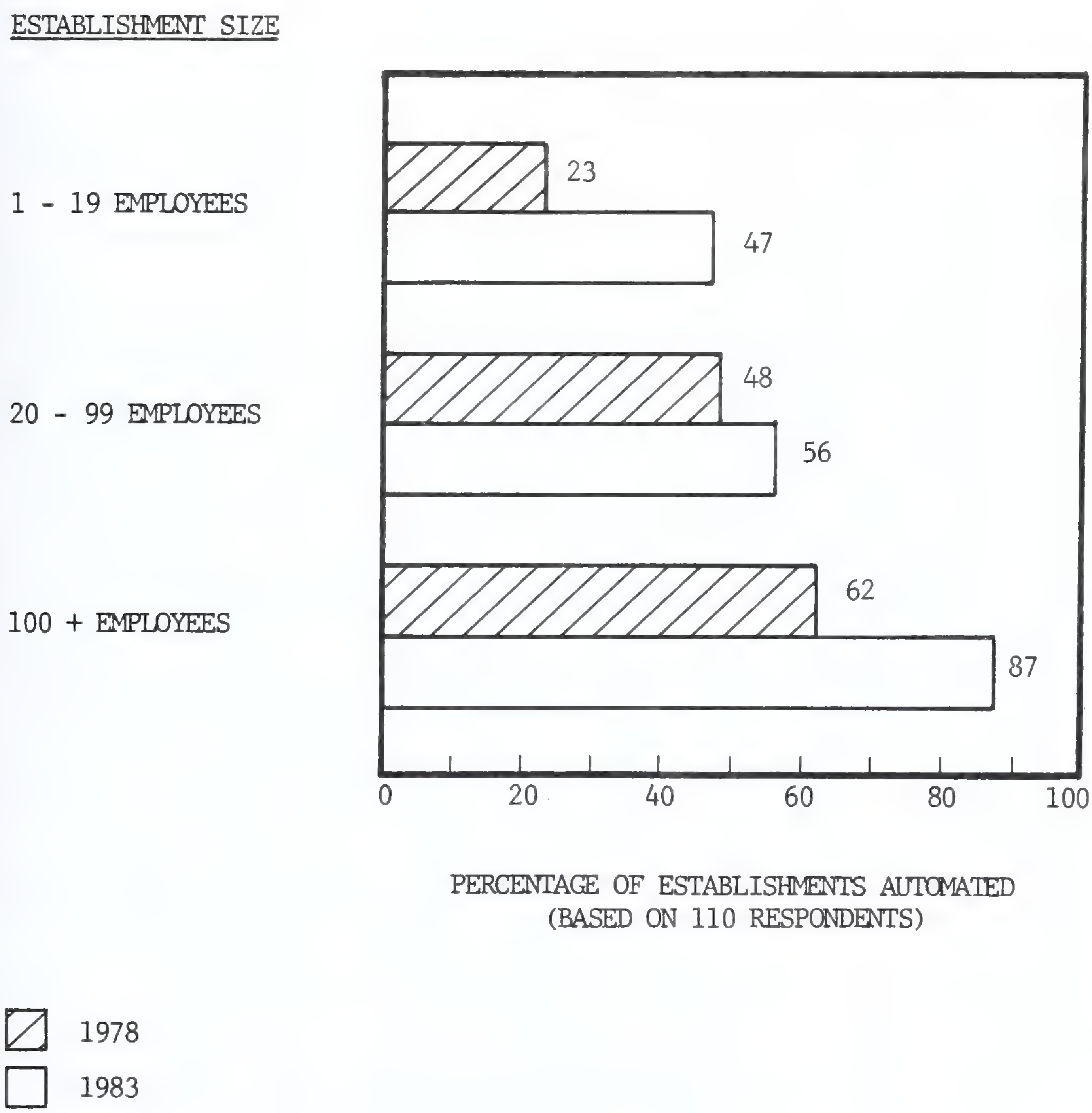


EXHIBIT V-15

FABRICATED METAL PRODUCTS:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=68)			BRANCHES (N=42)		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	32%	47%	16%	17%	38%	10%
Sales Analysis	15	49	10	7	52	-
Credit Authorization	30	16	16	19	24	5
Other Marketing	-	-	-	-	5	-
FINANCE & ACCOUNTING						
Payroll	12	72	15	5	69	7
Billing	16	54	21	14	55	10
Accounts Receivable	12	60	19	10	60	10
Accounts Payable	15	57	22	12	64	7
General Ledger	21	53	29	7	55	14
Other Finance	2	4	3	-	5	-

*On each question there was a varying percentage of 'No Responses.'' Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-16

FABRICATED METAL PRODUCTS:
ADMINISTRATIVE/SALES APPLICATION ANALYSIS - BRANCHES

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=8)			20 - 99 EMPLOYEES (N=8)			100+ EMPLOYEES (N=26)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
<u>MARKETING AND SALES</u>									
Order Entry	38%	13%	25%	25%	13%	-	8%	54%	8%
Sales Analysis	13	25	-	25	25	-	-	69	-
Credit Authorization	38	13		38	13	13	8	31	4
Other Marketing	-	-	-	-	13	-	-	4	-
<u>FINANCE AND ACCOUNTING</u>									
Payroll	13	25	13	13	50	13	-	88	4
Billing	25	13	13	13	63	-	12	65	12
Accounts Receivable	13	25	13	25	50	13	4	73	8
Accounts Payable	25	13	13	25	50	-	4	85	8
General Ledger	13	13	13	13	50	13	4	69	15
Other Finance	-	-	-	-	-	-	-	8	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-17

FABRICATED METAL PRODUCTS:
ADMINISTRATIVE/SALES APPLICATION ANALYSIS - INDEPENDENTS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=9)			20 - 99 EMPLOYEES (N=17)			100+ EMPLOYEES (N=42)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	67%	11%	33%	6%	41%	12%	36%	57%	14%
Sales Analysis	33	11	11	6	35	12	14	62	10
Credit Authorization	44	-	11	12	-	18	33	26	17
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	55	33	22	6	47	24	5	91	10
Billing	44	22	44	-	30	30	17	71	12
Accounts Receivable	44	33	33	-	35	24	10	76	14
Accounts Payable	44	22	44	6	35	24	12	74	17
General Ledger	44	44	44	-	41	18	24	60	31
Other Finance	11	11	11	-	-	-	-	5	2

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-18

FABRICATED METAL PRODUCTS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=68)			BRANCHES (N=42)		
	Manual	Automated Now	Automated In 5 Years (Additional)	Manual	Automated Now	Automated In 5 Years (Additional)
WAREHOUSING-DISTRIBUTION						
Order Allocation	34%	16%	19%	17%	24%	12%
Shipping	44	10	22	24	21	17
Stock Replenishment	34	19	25	19	29	12
Other Warehousing	2	2	2	-	-	-
Inventory Control	35	37	31	21	52	17
Receiving	43	24	19	29	26	17
Purchasing	2	2	2	-	-	-
MANUFACTURING						
Bill of Materials	32	21	24	19	36	19
Shop Floor Control	40	15	24	31	12	26
Order Tracking	31	16	18	24	14	26
Material Requirements Planning	34	15	25	21	29	29
Scheduling	32	19	21	21	19	26
Estimating	31	21	29	21	29	10
Numerical Control	16	24	12	21	19	10
Job Costing	2	4	6	10	12	7
Analysis/Design	21	9	4	12	10	5
Other R & D	2	2	-	2	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-19

FABRICATED METAL PRODUCTS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - BRANCHES

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=8)			20 - 99 EMPLOYEES (N=8)			100+ EMPLOYEES (N=26)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
WAREHOUSING-DISTRIBUTION									
Order Allocation	25%	13%	25%	25%	38%	13%	12%	23%	8%
Shipping	38	-	25	38	13	13	15	31	15
Stock Replenish.	25	25	13	25	25	13	15	31	12
Other Warehousing Inventory Control	13	13	25	25	50	-	23	65	19
Receiving	25	-	25	38	25	13	27	35	15
MANUFACTURING									
Bill of Materials	-	25	25	38	25	13	19	42	19
Shop Flr Control	38	-	13	38	-	13	27	19	31
Order Tracking	13	13	13	38	-	13	23	19	35
Material Requirements Planning	25	13	13	25	13	13	19	38	38
Scheduling	25	-	13	25	13	13	19	27	38
Estimating	25	-	13	25	13	-	19	42	12
Numerical Control	13	-	13	38	13	13	19	27	8
Job Costing	25	-	13	13	25	-	4	12	8
Analysis/Design	13	-	13	13	13	-	12	12	4
Other R & D	-	-	-	-	-	-	-	-	-

*On each question there was a varying percentage of 'No Responses.'' Therefore the sum of manual plus automated now may not equal 100%.

FABRICATED METAL PRODUCTS: INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=9)			20 - 99 EMPLOYEES (N=17)			100+ EMPLOYEES (N=42)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
WAREHOUSING-DISTRIBUTION									
Order Allocation	33%	-	33%	24%	18%	6%	38%	19%	21%
Shipping	44	-	22	30	12	12	50	12	26
Stock Replenish.	33	11	22	18	18	6	40	21	33
Other Warehousing	11	-	11	-	-	-	-	2	-
Inventory Control	55	11	44	18	41	12	38	40	36
Receiving	66	-	22	24	24	-	45	29	26
Purchasing	11	-	11	-	-	-	-	2	-
MANUFACTURING									
Bill of Materials	44	11	33	12	12	-	38	26	31
Shop Flr Control	66		11	24	12	-	40	19	36
Order Tracking	44		11	18	6	-	33	24	26
Material Requirements Planning	44	11	33	18	6	6	38	19	33
Scheduling	44	11	33	18	6	6	36	29	26
Estimating	55	11	44	12	18	18	33	24	31
Numerical Control	22	11	11	18	18	6	14	29	14
Job Costing	11	-	22	-	-	12	-	7	-
Analysis/Design	22	-	-	6	6	-	26	12	7
Other R & D	-	-	-	6	6	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-19

FABRICATED METAL PRODUCTS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - BRANCHES

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=8)			20 - 99 EMPLOYEES (N=8)			100+ EMPLOYEES (N=26)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
WAREHOUSING-DISTRIBUTION									
Order Allocation	25%	13%	25%	25%	38%	13%	12%	23%	8%
Shipping	38	-	25	38	13	13	15	31	15
Stock Replenish.	25	25	13	25	25	13	15	31	12
Other Warehousing									
Inventory Control	13	13	25	25	50	-	23	65	19
Receiving	25	-	25	38	25	13	27	35	15
MANUFACTURING									
Bill of Materials	-	25	25	38	25	13	19	42	19
Shop Flr Control	38	-	13	38	-	13	27	19	31
Order Tracking	13	13	13	38	-	13	23	19	35
Material Requirements Planning	25	13	13	25	13	13	19	38	38
Scheduling	25	-	13	25	13	13	19	27	38
Estimating	25	-	13	25	13	-	19	42	12
Numerical Control	13	-	13	38	13	13	19	27	8
Job Costing	25	-	13	13	25	-	4	12	8
Analysis/Design	13	-	13	13	13	-	12	12	4
Other R & D	-	-	-	-	-	-	-	-	-

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual

EXHIBIT V-20

FABRICATED METAL PRODUCTS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=9)			20 - 99 EMPLOYEES (N=17)			100+ EMPLOYEES (N=42)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
WAREHOUSING-DISTRIBUTION									
Order Allocation	33%	-	33%	24%	18%	6%	38%	19%	21%
Shipping	44	-	22	30	12	12	50	12	26
Stock Replenish.	33	11	22	18	18	6	40	21	33
Other Warehousing	11	-	11	-	-	-	-	2	-
Inventory Control	55	11	44	18	41	12	38	40	36
Receiving	66	-	22	24	24	-	45	29	26
Purchasing	11	-	11	-	-	-	-	2	-
MANUFACTURING									
Bill of Materials	44	11	33	12	12	-	38	26	31
Shop Flr Control	66		11	24	12	-	40	19	36
Order Tracking	44		11	18	6	-	33	24	26
Material Requirements Planning	44	11	33	18	6	6	38	19	33
Scheduling	44	11	33	18	6	6	36	29	26
Estimating	55	11	44	12	18	18	33	24	31
Numerical Control	22	11	11	18	18	6	14	29	14
Job Costing	11	-	22	-	-	12	-	7	-
Analysis/Design	22	-	-	6	6	-	26	12	7
Other R & D	-	-	-	6	6	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-21

FABRICATED METAL PRODUCTS: EDP, OFFICE, AND COMMUNICATIONS NEEDS (BY SIZE OF ESTABLISHMENT)

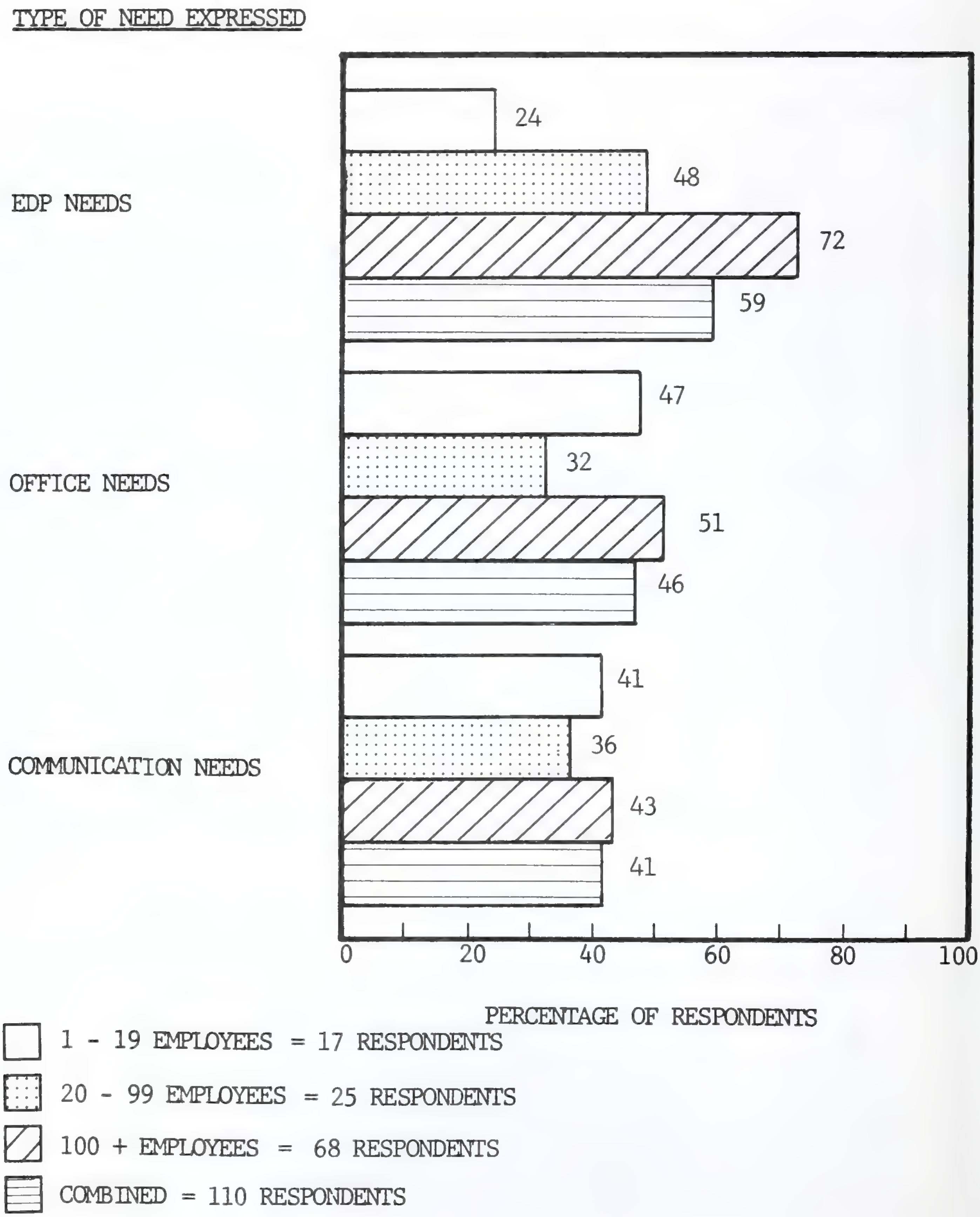


EXHIBIT V-22

TOTAL CURRENT EXPENDITURES

OF THE DISCRETE MANUFACTURING SECTOR

EXPENDITURE CLASSIFICATION	1 - 19 EMPLOYEES	20 - 99 EMPLOYEES	100 - 499 EMPLOYEES	TOTAL
EDP EQUIPMENT SERVICES, AND SUPPLIES	$58.7M	$300.0M	$690.3M	$1,049M
OFFICE EQUIPMENT	$110.6M	$307.6M	$517.8M	$936M
COMMUNICATIONS EQUIPMENT AND SERVICES	$288.1M	$801.4M	$1,347.5M	$2,347M
TOTAL	$457.4M	$1,409.0M	$2,555.6M	$4,422M

EXHIBIT V-23

AVERAGE CURRENT EXPENDITURES

OF THE DISCRETE MANUFACTURING SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$ 220	0.5%
OFFICE EQUIPMENT	157	0.3
COMMUNICATIONS EQUIPMENT & SERVICES	409	0.8

C. PROCESS MANUFACTURING

C. PROCESS MANUFACTURING

I. INDUSTRY CHARACTERISTICS

- The process manufacturing sector is similar in most respects to the discrete manufacturing sector in its current use and desire for more automated equipment and services. Penetration of computer equipment and services, as well as the use of communications interconnect equipment, is above average; the use of word processing equipment is currently average or below, but growing. Further needs for computer equipment or services have been expressed by more than 60 percent of all respondents.

- The process manufacturing sector is comprised almost entirely of small establishments (see Exhibit V-24). Over 140,000 establishments, more than 98 percent of all establishments in the process manufacturing sector, have less than 500 employees, and altogether employ 4.17 million people. The industries contained in the process manufacturing sector are:

  - Metal mining (SIC 10).

  - Anthracite mining (SIC 11).

  - Bituminous coal and lignite mining (SIC 12).

  - Oil and gas extraction (SIC 13).

  - Food and kindred products (SIC 20).

  - Tobacco manufacture (SIC 21).

  - Textile mill products (SIC 22).

- Lumber and wood products, except furniture (SIC 24).

- Paper and allied products (SIC 26).

- Chemicals and allied products (SIC 28).

- Petroleum refining and related industries (SIC 29).

- Rubber and miscellaneous plastic products (SIC 30).

- Stone, glass, clay, and concrete products (SIC 32).

- Primary metal industries (SIC 33).

• Small establishments of the process manufacturing sector spend $3.5 billion annually on equipment and services, including:

- EDP equipment.

- EDP services.

- Office equipment.

- Communications equipment.

- Communications services.

- Supplies.

• The industry subsector which is the focus of this section is the chemicals and allied products industry (SIC 28). The chemicals and allied products industry follows the general trends found in the process manufacturing sector.

- There are strong regional concentrations in the chemicals and allied products industry, as shown in Exhibit V-25. Over 34 percent of the chemicals and allied products industry is contained in New York, New Jersey, Pennsylvania, Ohio, and Illinois, with major locations also in California and Texas.

- Thirteen percent of the Fortune 500 companies are in chemicals and allied products; a total of 292 firms are classified in process manufacturing (see Exhibit V-26).

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

- Most establishments in the chemical and allied products industry use EDP equipment. However, there are great differences between branch and independent locations (see Exhibit V-27). Only ten percent of respondents from branches with less than 20 employees and only 17 percent of the medium-sized group stated they have EDP equipment installed.

  - Thirty-three percent of the smallest size group, and 67 percent of medium sized independent establishments stated that they have EDP equipment installed.

- Many respondents used computer services, including up to 50 percent of the 20-99 employee branch locations (see Exhibit V-28). This is the highest percentage of use of computer services by any industry sector in branch locations of this size group.

  - Rate of use of computer services is above average or average in all other size categories except for the smallest independents, who did not report any use of computer services (see Exhibit V-29).

- EDP penetration in the chemicals and allied products industry is near 70 percent overall, ranging from 37 percent of respondents from establishments with less than 20 employees to 83 percent of respondents from establishments with more than 100 employees (see Exhibit V-30).

- There is some acceptance of automated office equipment in the chemicals and allied products industry, predominantly in establishments with more than 100 employees. Twenty-five percent of independent locations had word processing equipment installed; but branches are not yet users of this type of equipment (see Exhibit V-31).

- Over forty-seven percent of respondents used on-site switching equipment (keyset or PABX - see Exhibit V-32). Most respondents use telephone company-supplied equipment, with less than 10 percent of all respondents reporting use of interconnect communications equipment.

- Fortune 500 branches are much higher in their use of other-than-DDD communications services than independents (see Exhibit V-33). For example, seventy-nine percent of branch locations used WATS lines, but only 40 percent of respondents from independent establishments used this service. Branches of Fortune 500 firms are also higher in their use of tie-lines and leased lines.

- Branches show a slightly higher degree of penetration of interconnect equipment than independents do (see Exhibit V-34).

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-35, V-36, and V-37 show that respondents use EDP more for financial/administrative functions than for sales/marketing functions or for industry specific functions.

- On the average, 68 percent of all establishments used EDP for administrative functions, while only 44 percent of respondents cited EDP applications for industry specific or marketing functions.

- By 1983, almost 80 percent of respondents will be using EDP for administrative functions, about 60 percent for marketing functions, and 50 percent for industry specific applications. Little EDP expansion is planned in any areas by establishments under 20 employees, but larger sized establishments have plans for 20-25 percent growth in the number of EDP applications within five years.

- No unusual pattern is seen in the way chemicals and allied products establishments use EDP for administrative or marketing applications (see Exhibits V-38 through V-40).

  - Automation has made few inroads in the smallest size category.

  - Little growth is foreseen by respondents in this size range.

- Automation of industry specific applications by the chemical and allied products industry is average to below average, ranging from 3 to 30 percent depending on the application.

- The smallest and medium-sized groups of both branches and independents show very little automation, but the largest-size group shows more automation currently and more intention to expand applications in the industry specific area. Independents seem somewhat more willing to expand than branches (see Exhibit V-42 and V-43).

4. EDP, OFFICE AND COMMUNICATION NEEDS

- In the chemicals and allied product industry, most respondents expressed further needs for EDP, office, and communications equipment (see Exhibit V-44.)

- Over 75 percent of respondents from establishments with more than 20 employees expressed additional EDP needs.

- Forty-four percent of respondents expressed additional office needs.

- Thirty-one percent respondents expressed additional communications needs.

• EDP and office automation needs expressed by establishments with more than 20 employees anticipate a closer future relationship between data processing and word processing, but little mention of further improvements to the production function. Specific desires included:

  - "Word processing and some intelligent functions."

  - "Computerized keypunch and order entry."

  - "Faster, more flexible output."

  - "Computerize office services."

• Office needs were expressed by over half of all establishments with more than 100 employees. Most establishments have plans to install word processing within five years, and many within two years.

• Communications needs were expressed by more than 30 percent of the medium and large size groups of establishments. Greater flexibility, additional features, and tighter cost controls were driving factors. The following comments illustrate some of these points.

  - "Looking for a better telephone system."

  - "Computer handling of outgoing long distance calls."

- "Planning to get a WATS line."

- "Currently looking into improved communications systems."

5. EXPENDITURES

- Expenditures for EDP, office, and communications equipment and services total about $3.5 billion dollars annually in the process manufacturing sector, placing this sector in the average range both by amount and rate of expenditure (see Exhibits V-45 and V-46).

  - Annual expenditures for EDP equipment, services, and supplies totaled $825 million or $195 per employee.

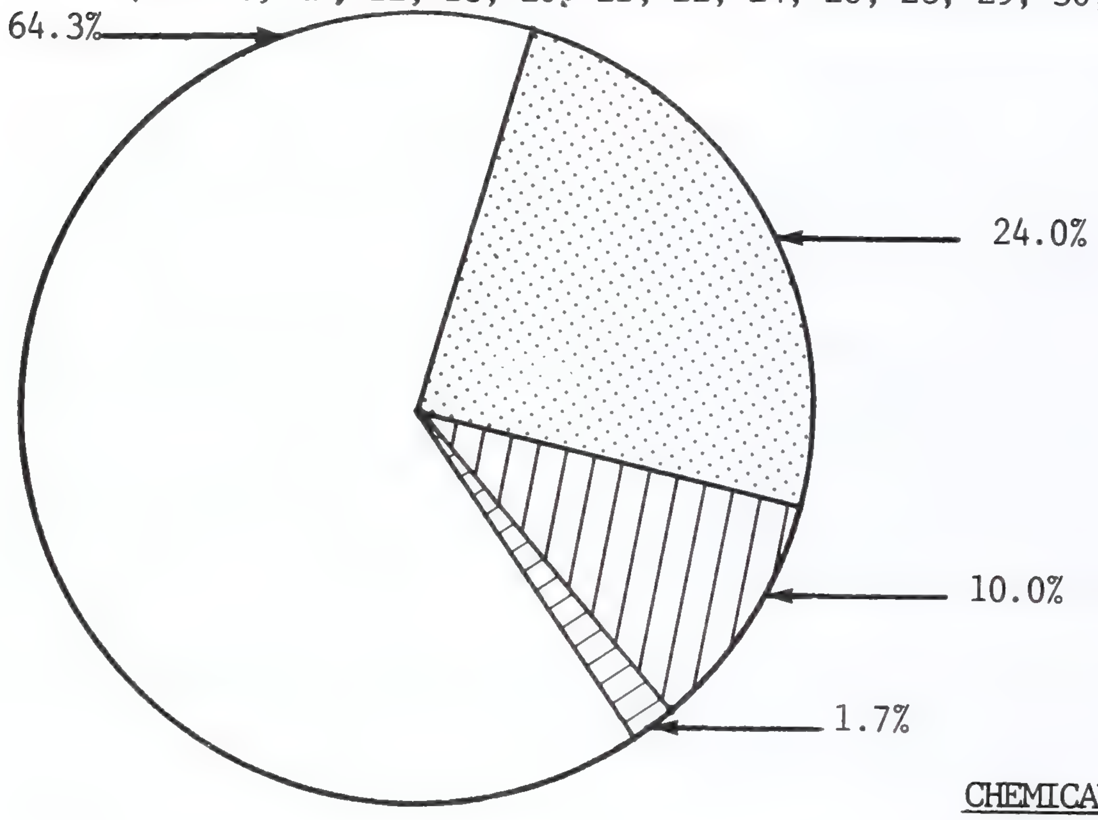
  - Annual expenditures for office equipment were $750 million or $177 per employee.

  - Annual expenditures for communications equipment and services were $1.9 billion or $452 per employee.

EXHIBIT V-24

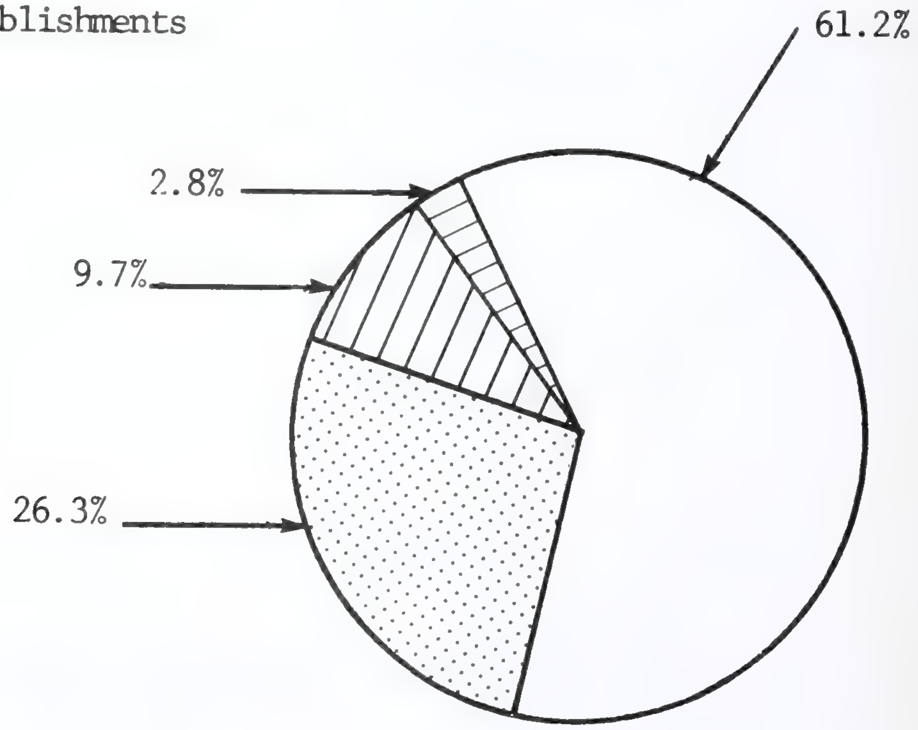
STRUCTURE OF PROCESS MANUFACTURING & CHEMICALS AND ALLIED PRODUCTS INDUSTRIES (BY SIZE OF ESTABLISHMENT, 1975)

PROCESS MANUFACTURING
(SIC 10, 11, 12, 13, 20, 21, 22, 24, 26, 28, 29, 30, 32, 33)



140,235 Establishments

CHEMICALS AND ALLIED PRODUCTS
(SIC 28)



10,920 Establishments

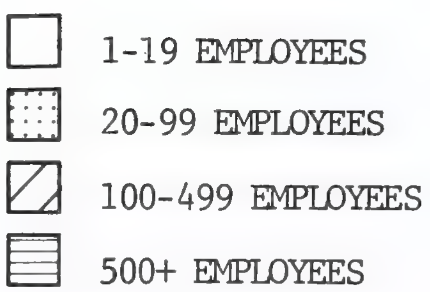


EXHIBIT V-25

DISTRIBUTION OF CHEMICALS AND ALLIED PRODUCTS
ESTABLISHMENTS (BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	121	1.1%	MT	20	0.2%
AK	6	0.0	NE	51	0.5
AZ	64	0.6	NV	22	0.2
AR	77	0.7	NH	23	0.2
CA	1269	11.9	NJ	877	8.3
CO	81	0.7	NM	28	0.3
CT	152	1.4	NY	828	7.8
DE	39	0.4	NC	255	2.4
DC	5	0.0	ND	6	0.0
FL	382	3.6	OH	647	6.1
GA	296	2.8	OK	88	0.8
HI	21	0.2	OR	96	0.9
ID	19	0.2	PA	566	5.3
IL	752	7.1	RI	71	0.7
IN	203	1.9	SC	122	1.2
IA	121	1.1	SD	12	0.1
KS	95	0.9	TN	204	1.9
KY	121	1.1	TX	710	6.7
LA	188	1.8	UT	48	0.5
ME	31	0.3	VT	16	0.2
MD	151	1.4	VA	119	1.1
MA	327	3.1	WA	126	1.2
MI	358	3.4	WV	53	0.5
MN	153	1.4	WI	206	1.9
MS	77	0.7	WY	9	0.1
MO	303	2.9			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				10,615	100.0%

EXHIBIT V-26

NUMBER OF "FORTUNE 500" COMPANIES CLASSIFIED AS PRIMARILY PROCESS MANUFACTURING FIRMS

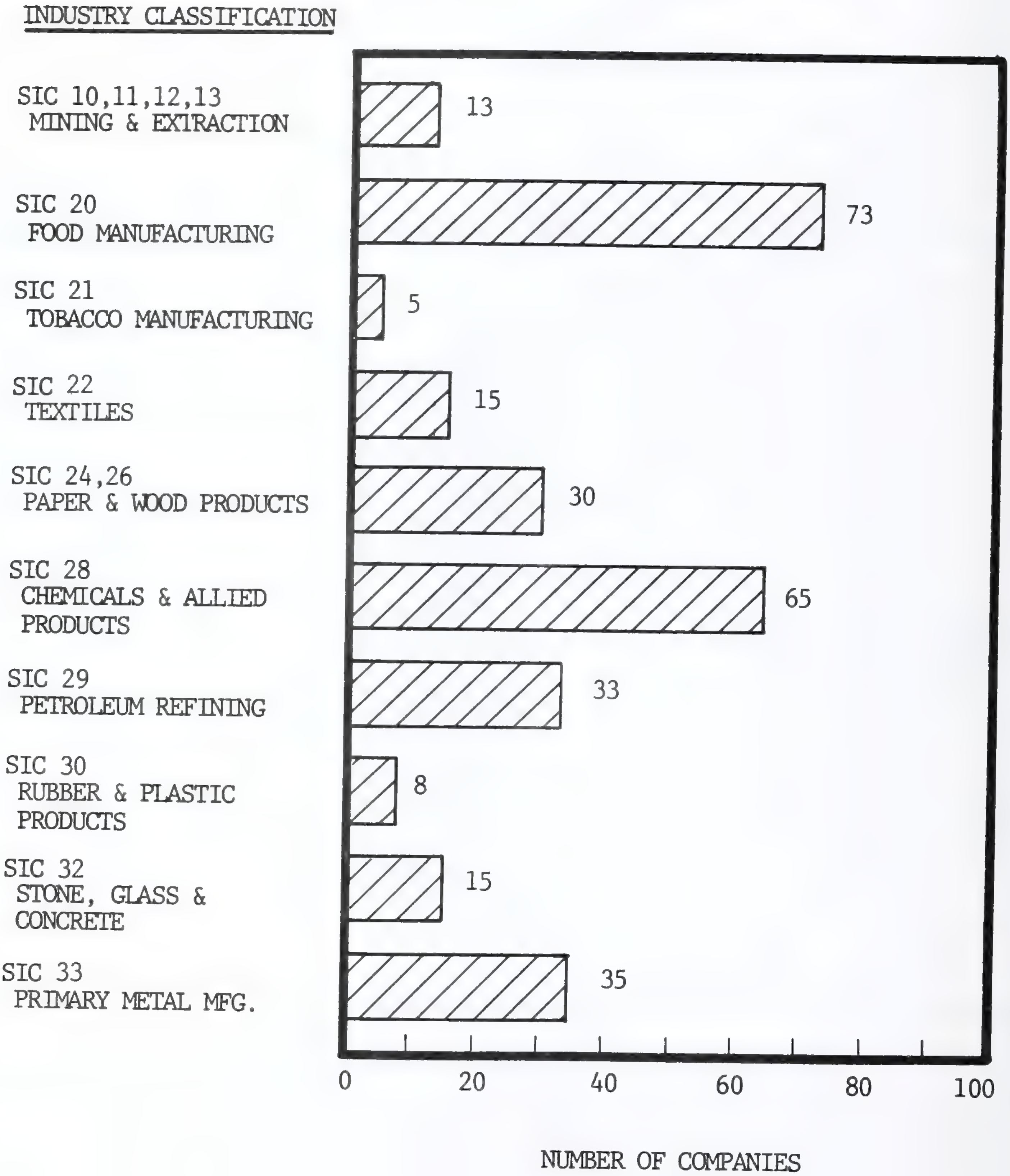


EXHIBIT V-27

CHEMICALS AND ALLIED PRODUCTS:

EDP EQUIPMENT INSTALLED (BY TYPE AND SIZE OF ESTABLISHMENT)

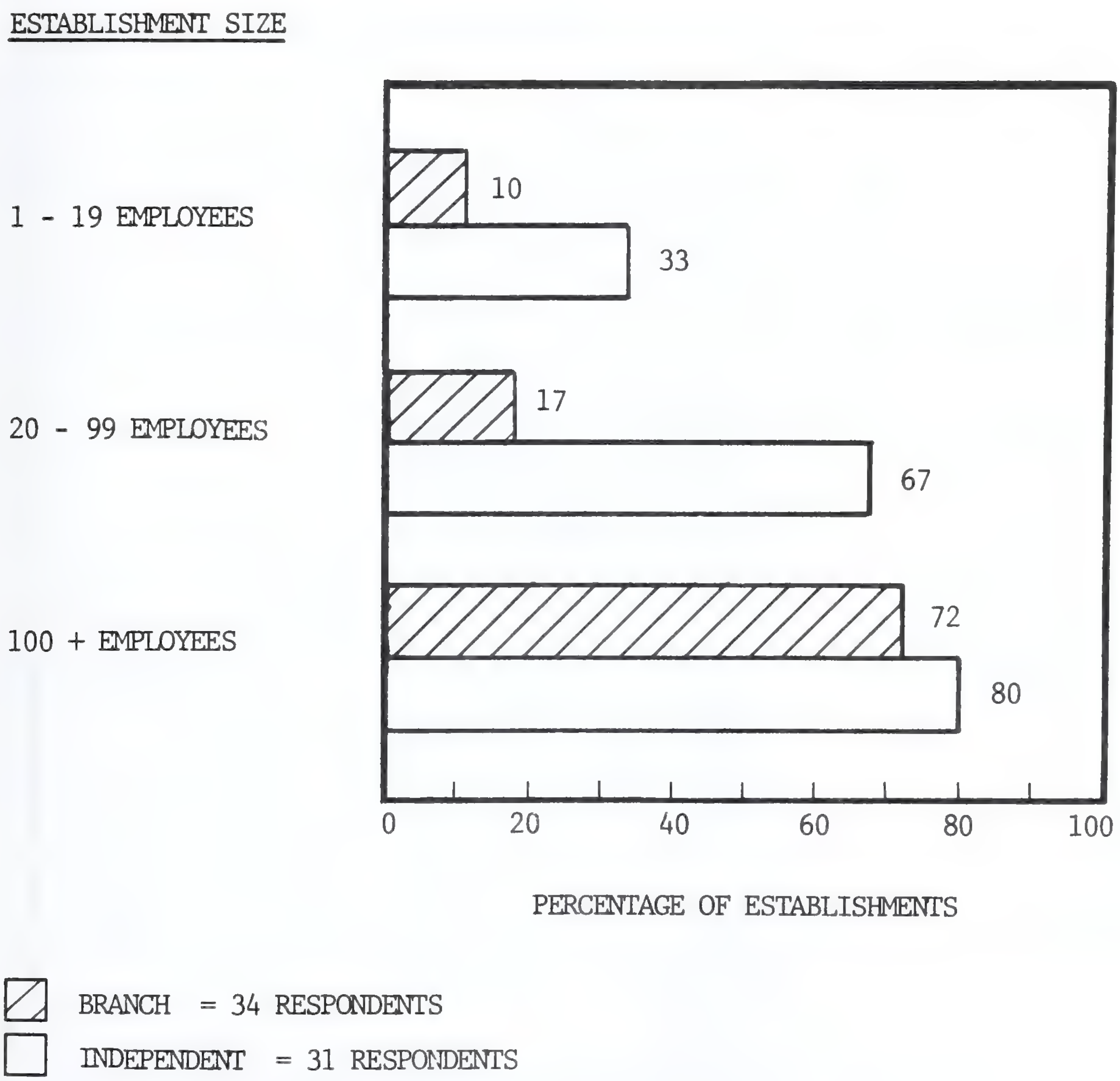


EXHIBIT V-28

CHEMICALS AND ALLIED PRODUCTS:

USE OF COMPUTER SERVICES - BRANCHES

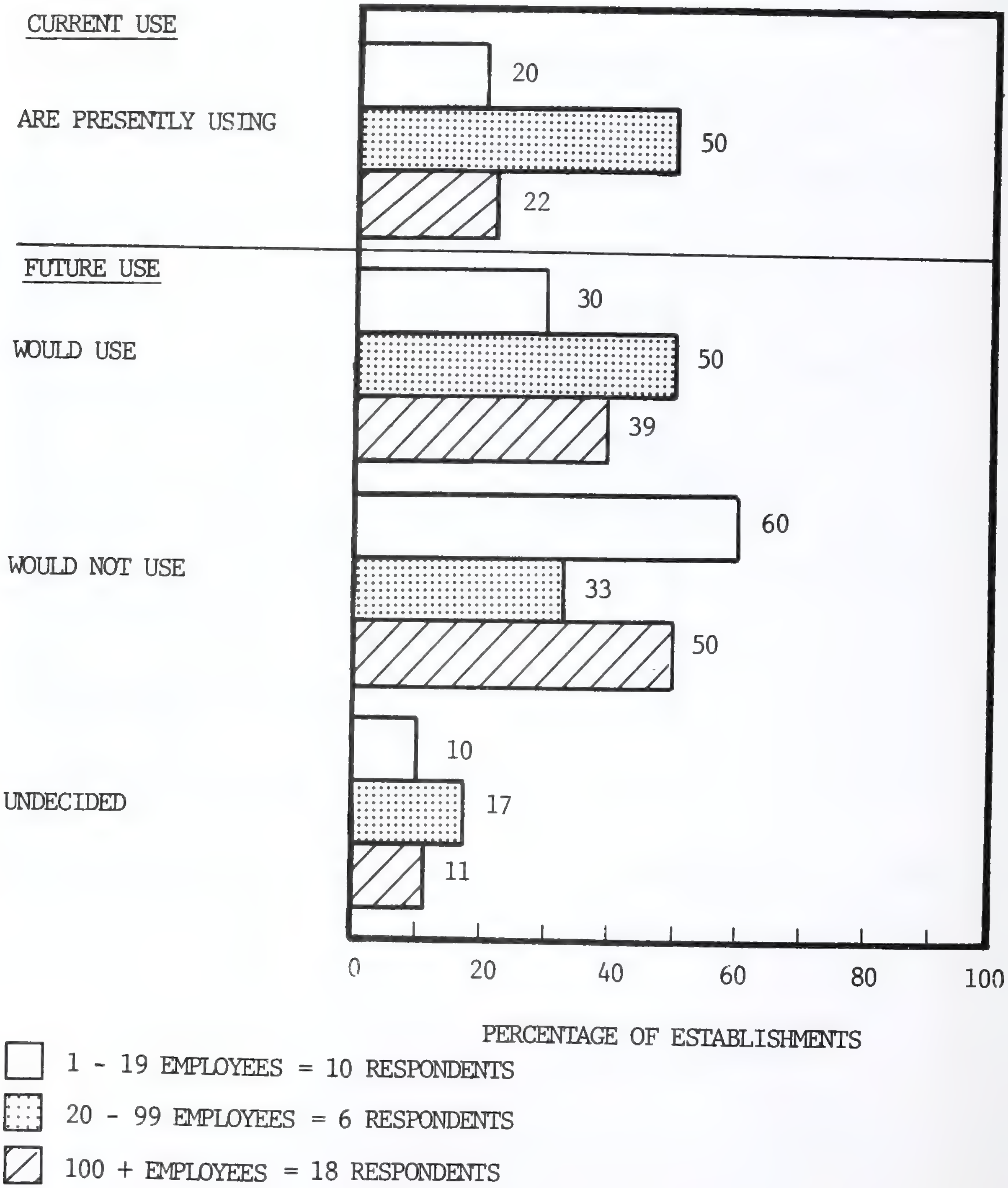


EXHIBIT V-29

CHEMICALS AND ALLIED PRODUCTS:

USE OF COMPUTER SERVICES - INDEPENDENTS

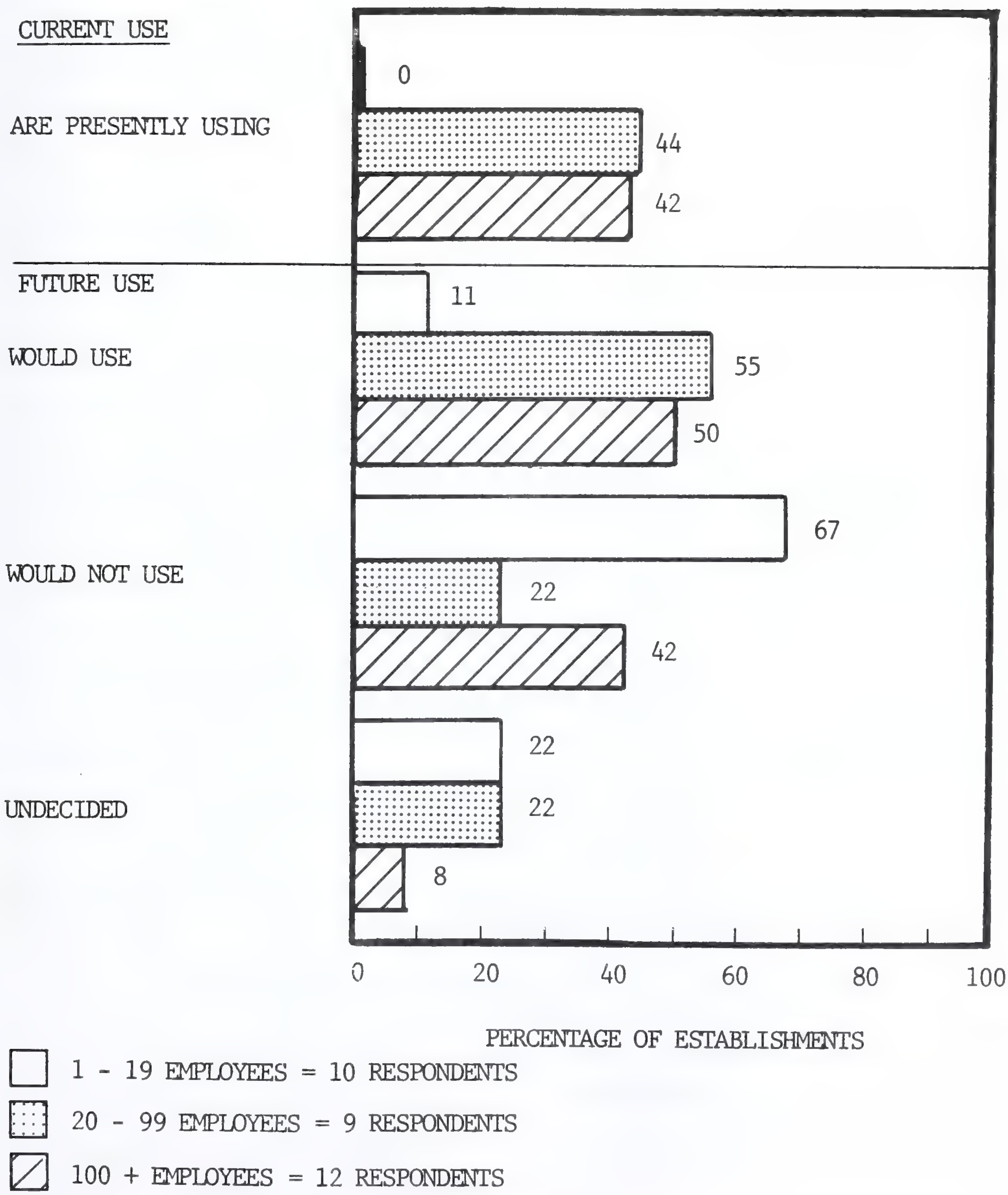


EXHIBIT V-30

CHEMICALS AND ALLIED PRODUCTS: PERCENTAGE OF USERS OF COMPUTER EQUIPMENT OR SERVICES OR BOTH (BY SIZE OF ESTABLISHMENT)

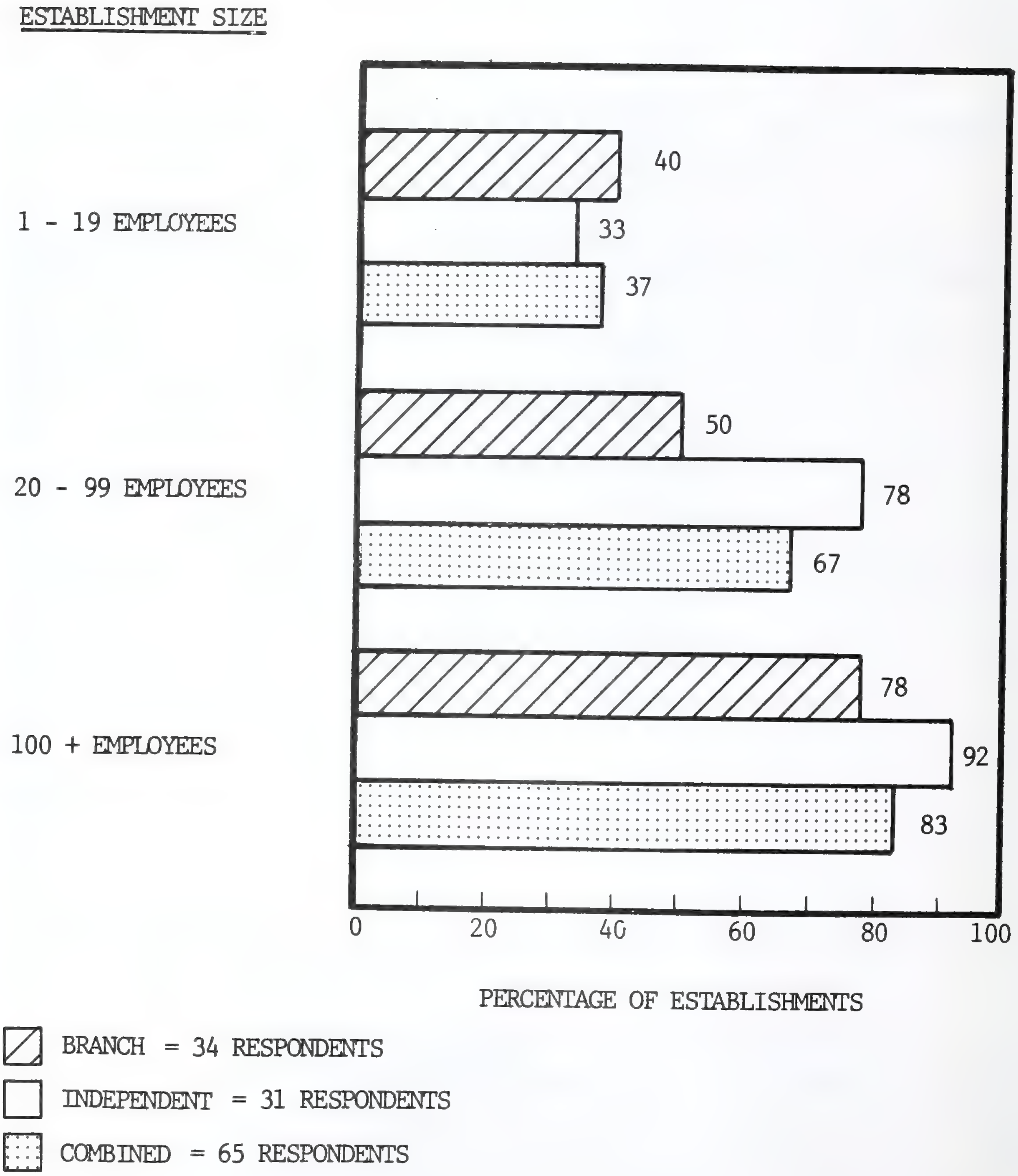


EXHIBIT V-31

CHEMICALS AND ALLIED PRODUCTS: USERS OF OFFICE AUTOMATION
(BY SIZE OF ESTABLISHMENT)

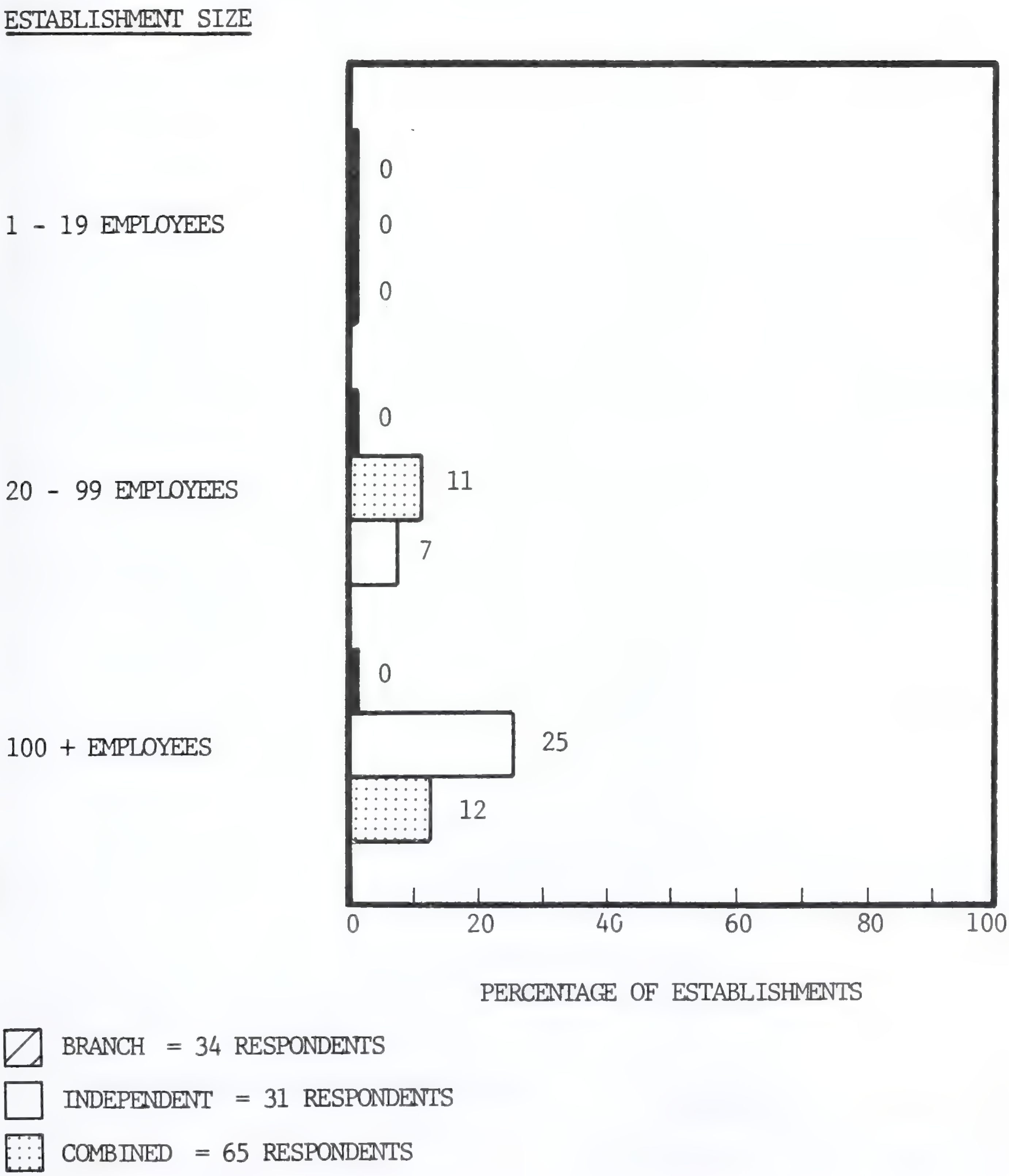


EXHIBIT V-32

CHEMICALS AND ALLIED PRODUCTS:

COMMUNICATIONS EQUIPMENT INSTALLED - BRANCHES AND INDEPENDENTS

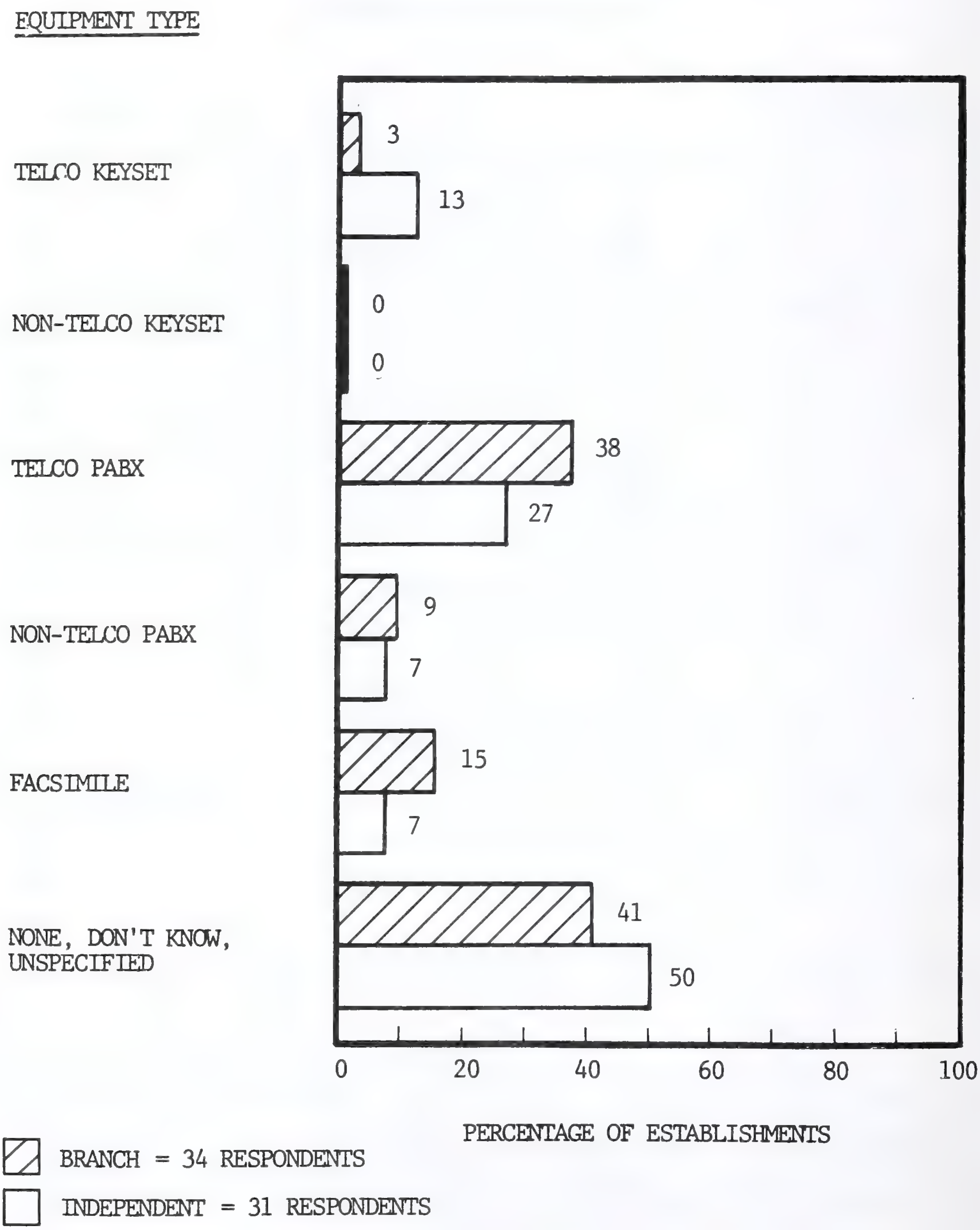


EXHIBIT V-33

CHEMICALS AND ALLIED PRODUCTS:

COMMUNICATIONS SERVICES INSTALLED - BRANCHES AND INDEPENDENTS

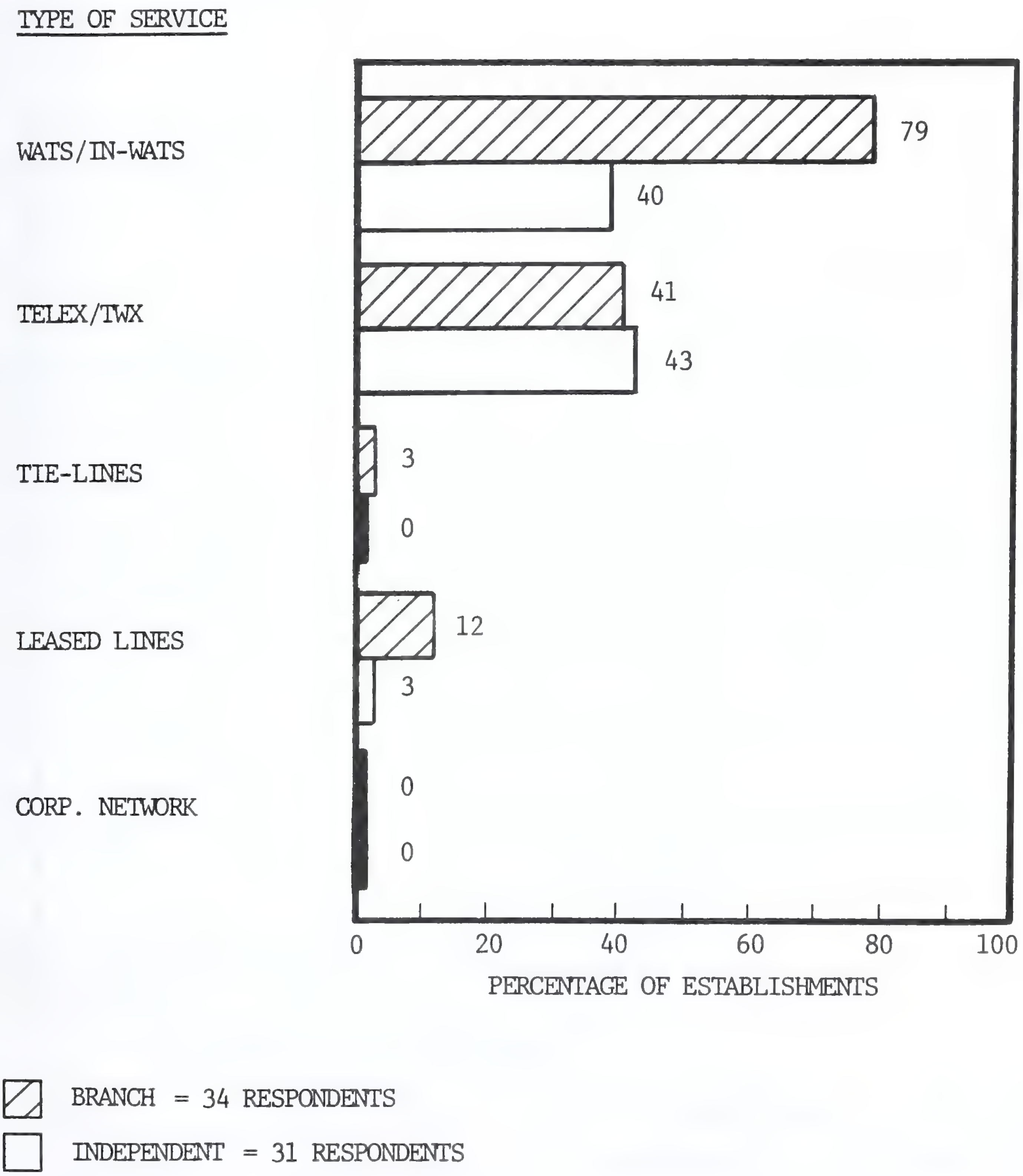


EXHIBIT V-34

CHEMICALS AND ALLIED PRODUCTS: USERS OF NON-TELCO COMMUNICATIONS EQUIPMENT/SERVICES (BY SIZE OF ESTABLISHMENT)

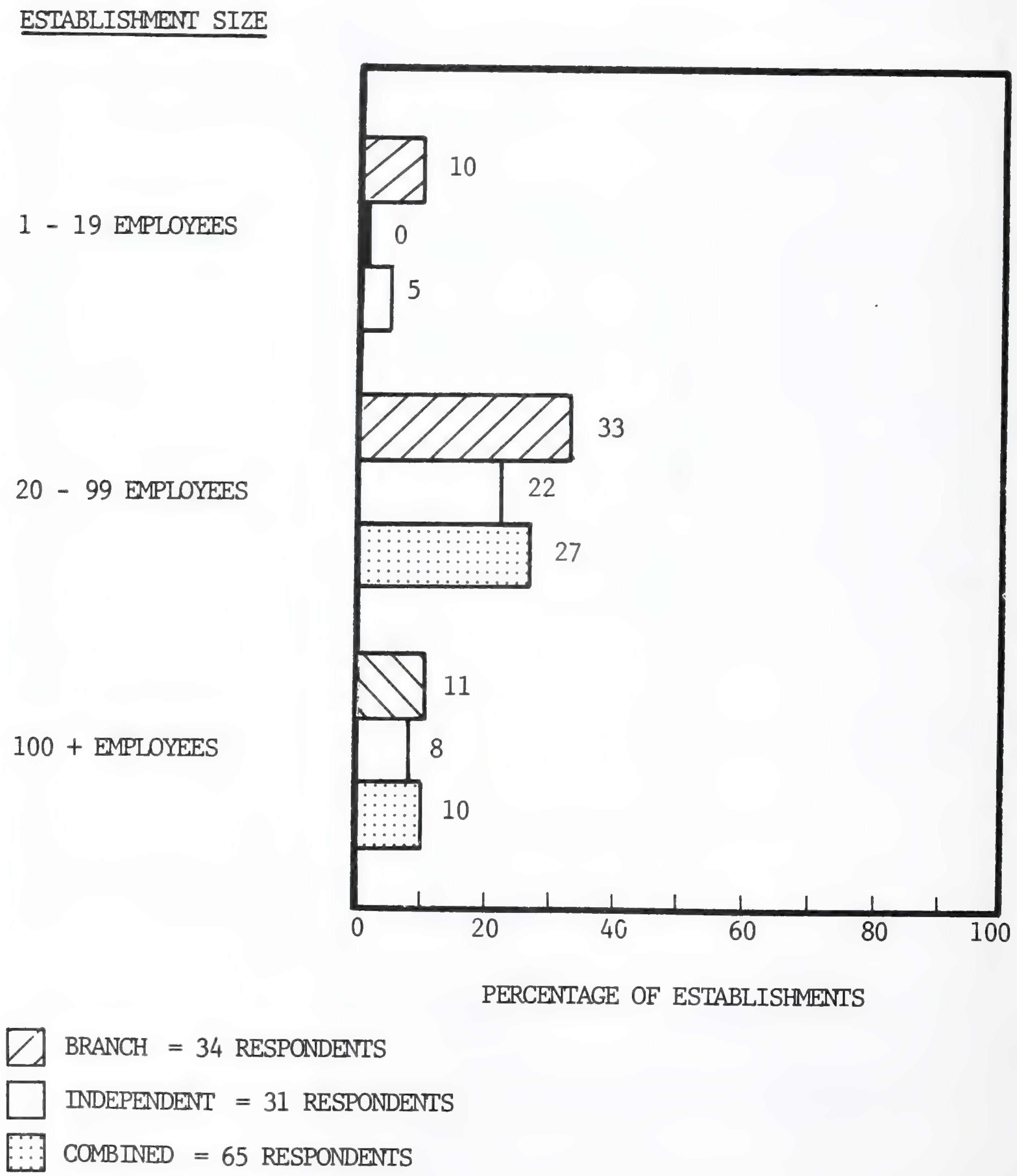


EXHIBIT V-35

CHEMICALS AND ALLIED PRODUCTS: USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

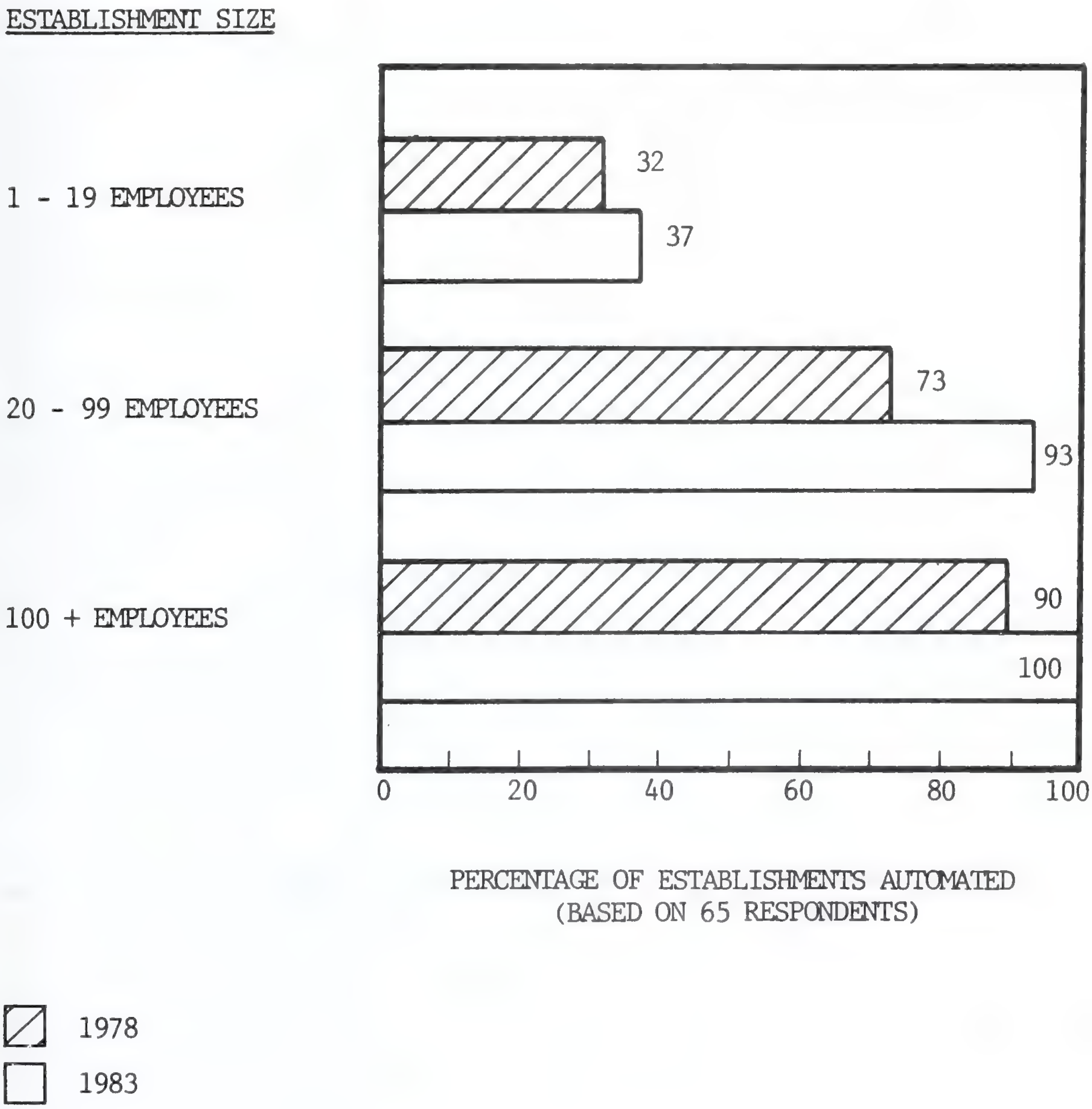


EXHIBIT V-36

CHEMICALS AND ALLIED PRODUCTS: USE OF EDP FOR SALES/MARKETING FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

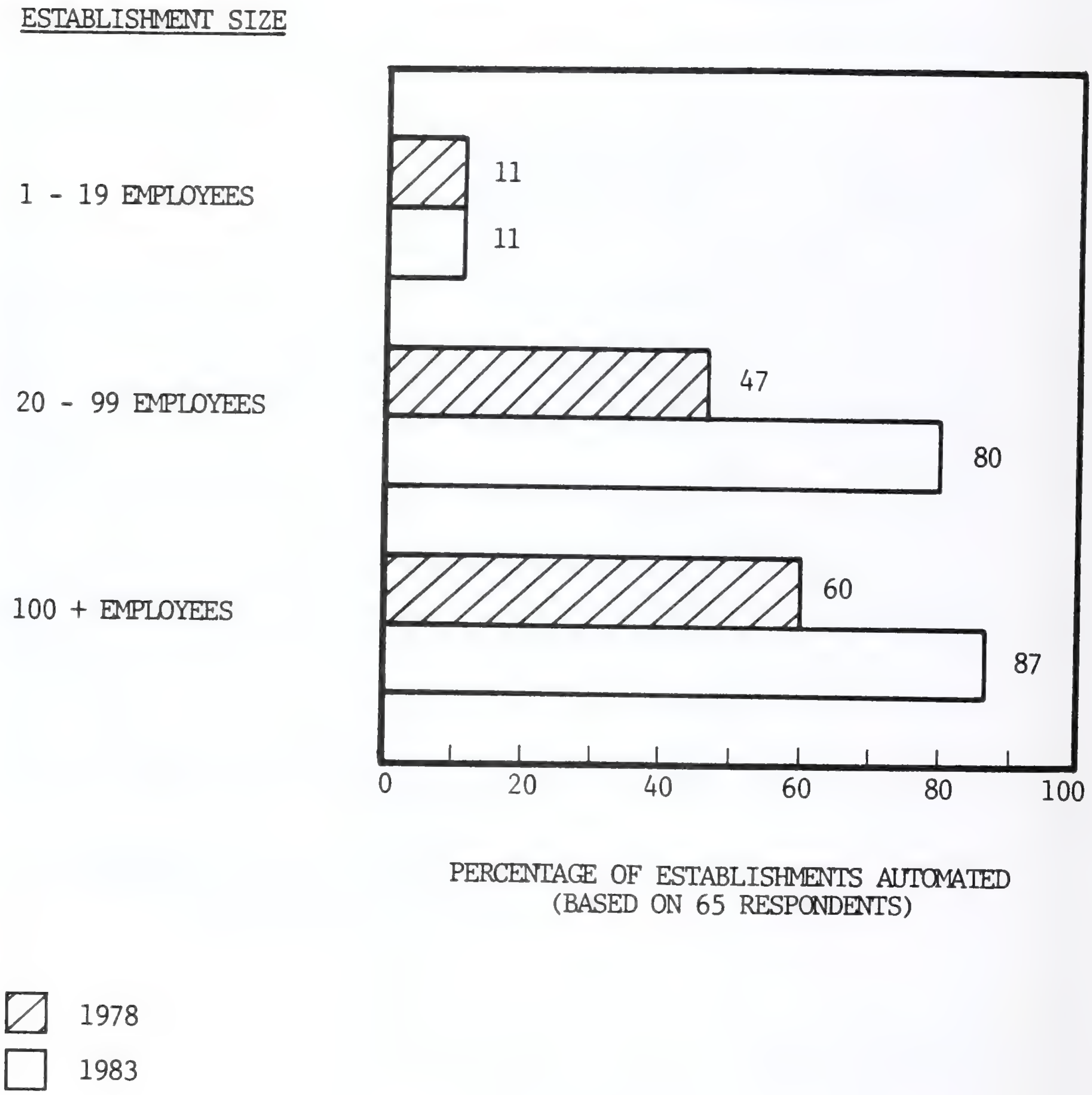


EXHIBIT V-37

CHEMICALS AND ALLIED PRODUCTS: USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

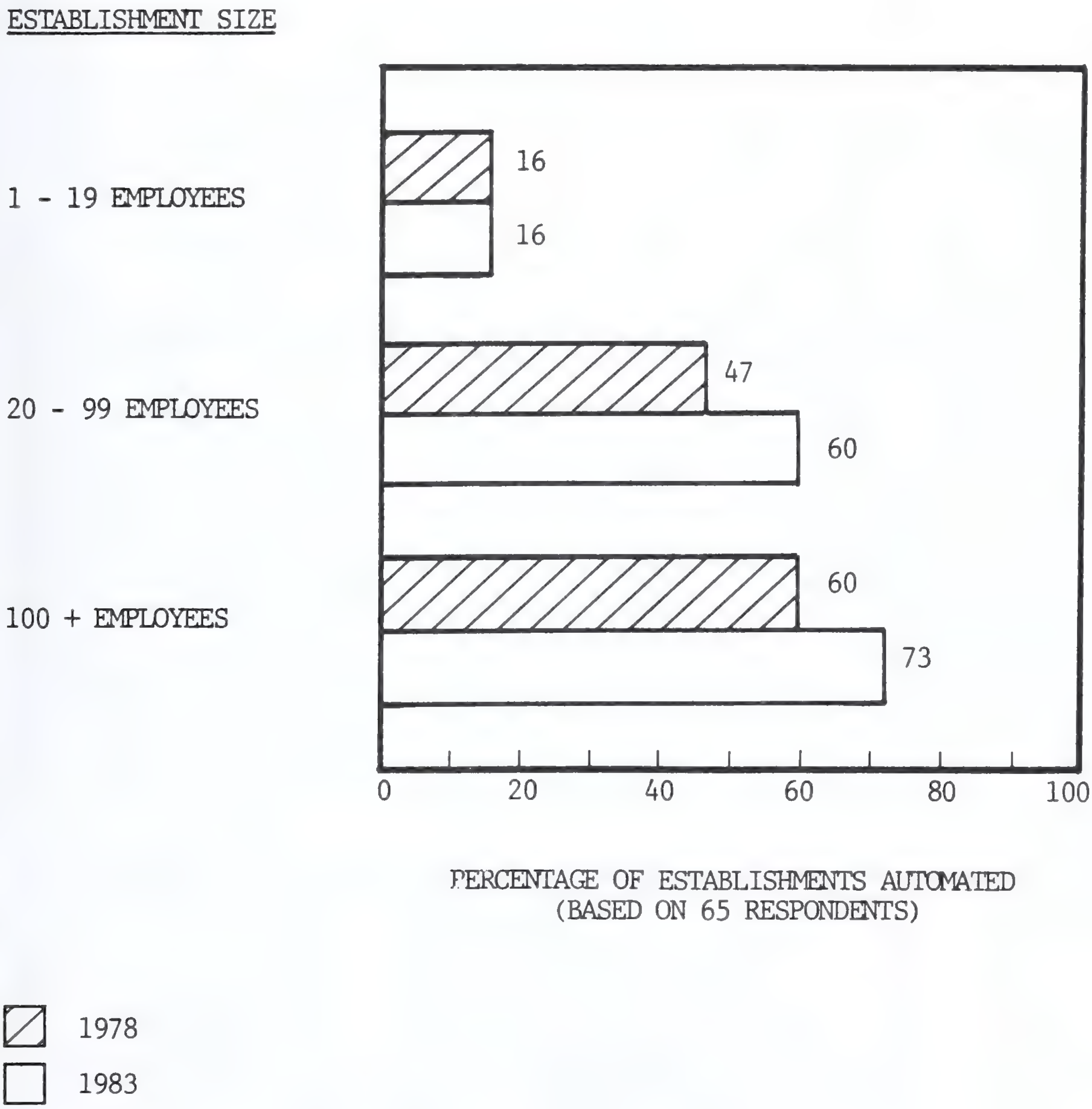


EXHIBIT V-38

CHEMICALS AND ALLIED PRODUCTS: ADMINISTRATIVE/SALES APPLICATIONS ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=31)			BRANCHES (N=34)		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	60 %	30 %	17%	18%	32%	12%
Sales Analysis	43	47	13	12	32	6
Credit Authorization	63	10	7	18	18	12
Other Marketing	-	-	-	-	6	-
FINANCE & ACCOUNTING						
Payroll	33	40	3	9	68	-
Billing	50	47	13	15	59	6
Accounts Receivable	37	57	7	12	47	6
Accounts Payable	43	53	7	15	47	9
General Ledger	30	47	10	12	32	6
Other Finance	3	3	-	-	6	-

*On each question there was a varying percentage of 'No Responses.'' Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-39

CHEMICALS AND ALLIED PRODUCTS: ADMINISTRATIVE/SALES APPLICATION ANALYSIS - BRANCHES

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=10)			20 - 99 EMPLOYEES (N=6)			100+ EMPLOYEES (N=18)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	10%	-	-	50%	33%	17%	11%	50%	17%
Sales Analysis	10	-	-	33	-	17	6	61	6
Credit Authorization	-	-	-	50	-	33	17	33	11
Other Marketing	-	-	-	-	-	-	-	11	-
FINANCE AND ACCOUNTING									
Payroll	10	20	-	33	67	-	-	83	-
Billing	20	30	10	33	33	-	7	83	7
Accounts Receivable	10	10	10	33	33	-	7	72	7
Accounts Payable	20	10	10	17	33	-	13	72	13
General Ledger	10	-	10	33	17	-	7	56	7
Other Finance	-	-	-	-	-	-	-	11	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-40

CHEMICALS AND ALLIED PRODUCTS: ADMINISTRATIVE/SALES APPLICATION ANALYSIS - INDEPENDENTS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=10)			20 - 99 EMPLOYEES (N=9)			100+ EMPLOYEES (N=12)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	56%	22%	-	56%	22%	22%	67%	42%	25%
Sales Analysis	56	22	-	22	56	11	50	58	25
Credit Authorization	67	-	-	67	11	11	58	17	8
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	67	22	-	33	56	11	8	42	0
Billing	56	33	-	55	44	33	42	58	8
Accounts Receivable	44	33	-	33	67	11	33	67	8
Accounts Payable	44	33	-	44	57	11	42	58	8
General Ledger	44	33	-	11	56	11	33	50	17
Other Finance	11	-	-	-	11	-	-	-	-

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-41

CHEMICALS AND ALLIED PRODUCTS: INDUSTRY SPECIFIC APPLICATION ANALYSIS - TOTALS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=31)			BRANCHES (N=34)		
	Manual	Automated Now	Automated In 5 Years (Additional)	Manual	Automated Now	Automated In 5 Years (Additional)
WAREHOUSING-DISTRIBUTION						
Order Allocation	29%	10%	10%	9%	23%	3%
Shipping	37	13	10	23	21	-
Stock Replenishment	37	13	10	15	15	-
Other Warehousing	3	-	-	-	3	-
Inventory Control	50	30	17	38	26	12
Receiving	56	26	3	41	21	3
Purchasing	3	-	-	3	-	-
MANUFACTURING						
Bill of Materials	40	3	7	12	15	3
Shop Floor Control	43		7	21	3	3
Order Tracking	43	3	10	36	9	6
Material Requirements Planning	-	-	-	48	15	15
Scheduling	60	7	13	45	12	15
Estimating	47	7	7	27	21	12
Numerical Control	13	3	7	15	6	3
Job Costing	-	-	-	18	9	9
Analysis/Design	-	-	-	-	-	-
Other R & D	-	-	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-42

CHEMICALS AND ALLIED PRODUCTS: INDUSTRY SPECIFIC APPLICATION ANALYSIS - BRANCHES

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=10)			20 - 99 EMPLOYEES (N=6)			100+ EMPLOYEES (N=18)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
WAREHOUSING-DISTRIBUTION									
Order Allocation	-	10%	-	33%	17%	-	5%	32%	5%
Shipping	-	10	-	66	-	-	21	32	-
Stock Replenish.	-	-	-	33	17	-	16	21	-
Other Warehousing	-	-	-	-	-	-	-	5	-
Inventory Control	20	20	-	50	17	-	42	32	21
Receiving	20	10	-	50	-	-	47	32	5
Purchasing	-	-	-	-	-	-	5	-	-
MANUFACTURING									
Bill of Materials	-	-	-	50	17	-	6	22	-
Shop Flr Control	10	-	-	33	-	-	22	6	6
Order Tracking	20	-	-	50	-	-	39	17	11
Material Requirements Planning	20	-	-	67	17	-	56	22	28
Scheduling	20	-	-	50	33	-	56	11	28
Estimating	20	-	-	17	17	-	33	6	22
Numerical Control	-	-	-	33	-	-	17	11	6
Job Costing	-	-	-	-	-	-	33	7	17
Analysis/Design	-	-	-	-	-	-	39	17	11
Other R & D	-	-	-	-	-	-	-	-	-

*On each question there was a varying percentage of 'No Responses.' Therefore the sum of manual plus automated

EXHIBIT V-43

CHEMICALS AND ALLIED PRODUCTS: INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=10)			20 - 99 EMPLOYEES (N=9)			100+ EMPLOYEES (N=12)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
WAREHOUSING-DISTRIBUTION									
Order Allocation	33%	11%	-	33%	11%	11%	38%	8%	15%
Shipping	44	11	-	44	11	11	38	15	15
Stock Replenish.	44	11	-	44	11	22	38	15	8
Other Warehousing	11		-						
Inventory Control	66	11	-	55	22	44	38	46	8
Receiving	44	22	-	55	22	11	61	31	-
Purchasing	11	-	-	-	-	-	-	-	-
MANUFACTURING									
Bill of Materials	56	-	-	33	-	11	33	8	8
Shop Flr Control	56	-	-	33	-	11	42		8
Order Tracking	33	-	-	56	-	11	8	17	43
Material Requirements Planning	56	-	-	56	-	22	67	17	17
Scheduling	44	-	-	78	-	22	83	17	17
Estimating	33	-	-	56	11	11	50	8	8
Numerical Control	11	-	-	11	11	22	17	8	8
Job Costing	-	-	-	-	-	-	-	-	-
Analysis/Design	-	-	-	-	-	-	-	-	-
Other R & D	-	-	-	-	-	-	-	-	-

*On each question there was a varying percentage of 'No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-44

CHEMICALS AND ALLIED PRODUCTS: EDP, OFFICE, AND COMMUNICATION NEEDS (BY SIZE OF ESTABLISHMENT)

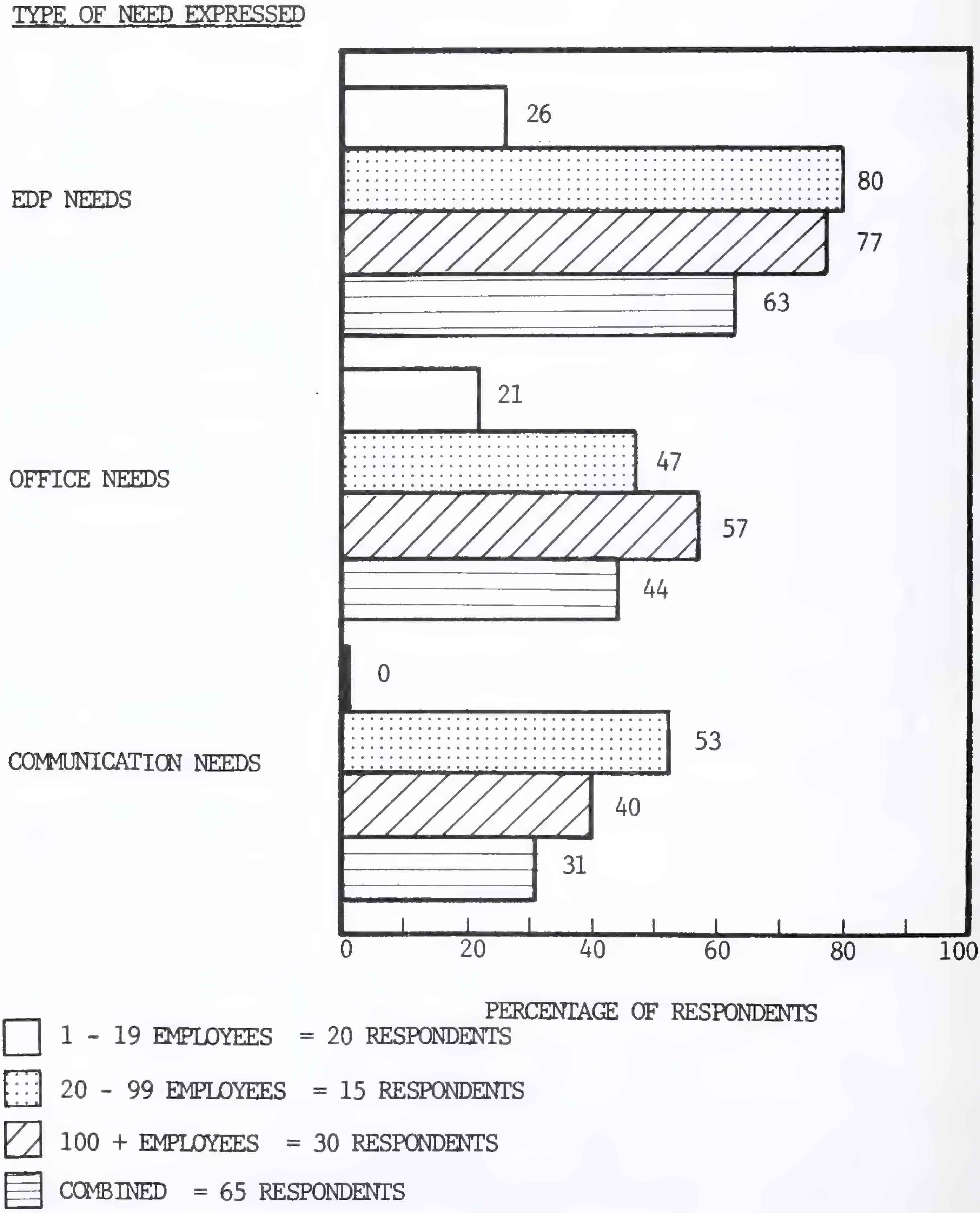


EXHIBIT V-45

TOTAL CURRENT EXPENDITURES

OF THE PROCESS MANUFACTURING SECTOR

EXPENDITURE CLASSIFICATION	1 - 19 EMPLOYEES	20 - 99 EMPLOYEES	100 - 499 EMPLOYEES	TOTAL
EDP EQUIPMENT SERVICES, AND SUPPLIES	$36.3M	$233.5M	$555.2M	$825M
OFFICE EQUIPMENT	$66.0M	$234.0M	$450.0M	$750M
COMMUNICATIONS EQUIPMENT AND SERVICES	$168.1M	$595.9M	$1,146.0M	$1,910M
TOTAL	$270.4M	$1,063.4M	$2,151.5M	$3,485M

EXHIBIT V-46

AVERAGE CURRENT EXPENDITURES

OF THE PROCESS MANUFACTURING SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$195	0.3%
OFFICE EQUIPMENT	177	0.3
COMMUNICATIONS EQUIPMENT & SERVICES	452	0.7

D. TRANSPORTATION

D. TRANSPORTATION

I. INDUSTRY CHARACTERISTICS

- The transportation sector is almost entirely composed of small establishments, and ranks below average in the use of automated equipment and services. The industry shows a low level of awareness of the advantages of automation.

- More than 99 percent of the transportation sector is comprised of small establishments (see Exhibit V-47). Over 100,000 establishments have less than 500 employees, and altogether employ 1.39 million people. The industries contained in the transportation sector are:

  - Local and suburban transit and interurban highway passenger transportation (SIC 41).

  - Motor freight and warehousing (SIC 42).

  - United States postal service (SIC 43).

  - Water transportation (SIC 44).

  - Transportation by air (SIC 45).

  - Pipelines, except natural gas (SIC 46).

  - Transportation services (SIC 47).

- Small establishments of the transportation sector spend $872 million annually on equipment and services, including:

  - EDP equipment.

- EDP services.

- Office equipment.

- Communications equipment.

- Communications services.

- Supplies.

- The industry subsector which is the focus of this section is the motor freight and warehousing industry (SIC 42). The motor freight industry is structured like the whole transportation sector.

- There are no regional concentrations in the motor freight industry apart from the normal distribution of population, as shown in Exhibit V-48.

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

- Not many establishments use EDP equipment. However, there are great differences among those that do between branch and independent locations (see Exhibit V-49). Eighty-seven percent of respondents from branches of more than 100 employees stated that they use EDP equipment, whereas only 64 percent of respondents from independent establishments in the same size range stated that they have EDP equipment installed.

  - The difference is even more pronounced in the medium sized establishments, where the branch usage is twice as high as the independent usage.

  - No small branches were located during the survey, but small independents report no EDP equipment installed at all.

- Less than one-fourth of all respondents used computer services.

- Thirteen percent of respondents from branches of Fortune 50 transportation firms stated that they use or would consider using computer services. A common reason from branch respondents for not using computer services was access to a corporate owned computer (see Exhibit V-50).

- Twenty-nine percent of all respondents from independent establishments were using computer services, and an additional small percentage would consider using services (see Exhibit V-51).

- EDP penetration in the motor freight industry nears 65 percent of medium and larger sized establishments, but INPUT believes it to be very low among the vast majority of small establishments (see Exhibit V-52). There are also significant differences in EDP penetration between branch and independent locations.

- There is some acceptance of automated word processing by large branch locations in the motor freight industry. Twenty percent of respondents from branch locations with more than 100 employees stated that they use automated office equipment (see Exhibit V-53). However, there is very little usage yet by independent establishments of any size.

- Sixty-six percent of respondents used on-premises switching equipment (keyset or PABX - see Exhibit V-54); but all respondents stated that they use telephone company-supplied equipment.

- There are few disparities in usage of communications services between branches and independents, except for the use of Telex/TWX (see Exhibit V-55). Fifty-seven percent of branch locations reported use of TWX or Telex, while only 29 percent of respondents from independent establishments had TWX or Telex service installed.

- There is no reported use of interconnect communication equipment by the motor freight industry.

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-56, V-57, and V-58 show that respondents use EDP much more for financial/administrative functions than for sales/marketing functions or for industry specific functions.

  - Seventy-seven percent of establishments with more than 100 employees used EDP for administrative functions. Only 31 percent of the same group of respondents cited EDP applications for industry specific functions, and only 12 percent for sales/marketing functions.

  - By 1983, 89 percent of respondents from establishments with more than 100 employees will be using EDP for administrative functions, and 42 percent of respondents will be using EDP for industry specific applications. However, respondents stated no growth plans in either of these areas for establishments under 20 employees.

- Motor freight establishments report moderate use of EDP for administrative applications (see Exhibit V-59):

  - Twenty-nine to fifty-eight percent of independent locations were using EDP for payroll, billing, accounts receivable, accounts payable, or general ledger. Four to 13 percent of respondents have plans to add some administrative applications in the next five years.

- As noted previously, larger establishments are more advanced in the number of EDP applications they have automated, but are still not as advanced as most other industry sectors (see Exhibit V-60 and V-61).

- There are distinct differences in automation of industry specific functions between branch and independent locations. For example, all respondents from independent enterprises who use EDP for industry specific applications either have automated or have plans to automate interline payables. No respondents from branch locations have automated or have any plans to automate interline payables (see Exhibit V-62).

- There are few plans to automate any additional industry specific applications in the next five years (see Exhibit V-63 and V-64).

4. EDP, OFFICE AND COMMUNICATION NEEDS

- In the motor freight industry, establishments in the largest size class expressed further needs for EDP, office, and communications equipment and services (see Exhibit V-65); but few needs were expressed by the medium and smaller size establishments:

  - Sixty-eight percent of all respondents expressed further EDP needs.

  - Fifteen percent of all respondents expressed further office needs.

  - Twenty-three percent of all respondents expressed further communications needs.

- EDP needs were expressed predominantly by large establishments, including interest in multi-function capabilities. Most needs expressed were those of companies just beginning to consider data processing. Typical comments were:

  - "Looking into a computer for most functions now done manually."

- "Need a faster way to keep track of finances and interline payables."

- "Need to tie into company records more easily for better knowledge of deliveries."

- Office needs were expressed exclusively by establishments with more than 100 employees, and were closely related to EDP needs as illustrated above.

- Communications needs were expressed by 23 percent of respondents. Needs expressed were for expanded capacity and flexibility, but again were typical of companies just beginning to consider automation of any kind. Sample comments:

  - "A new switchboard."

  - "A unit with many answering functions."

  - "A telex system for our remote processing center."

5. EXPENDITURES

- Expenditures for EDP, office, and communications equipment and services total $872 million annually in the transportation sector, as shown in Exhibits V-66 and V-67. This level of expenditure ranks eleventh of the twelve sectors included in this report.

  - Annual expenditures for EDP equipment, services, and supplies were $208 million or $149 per employee.

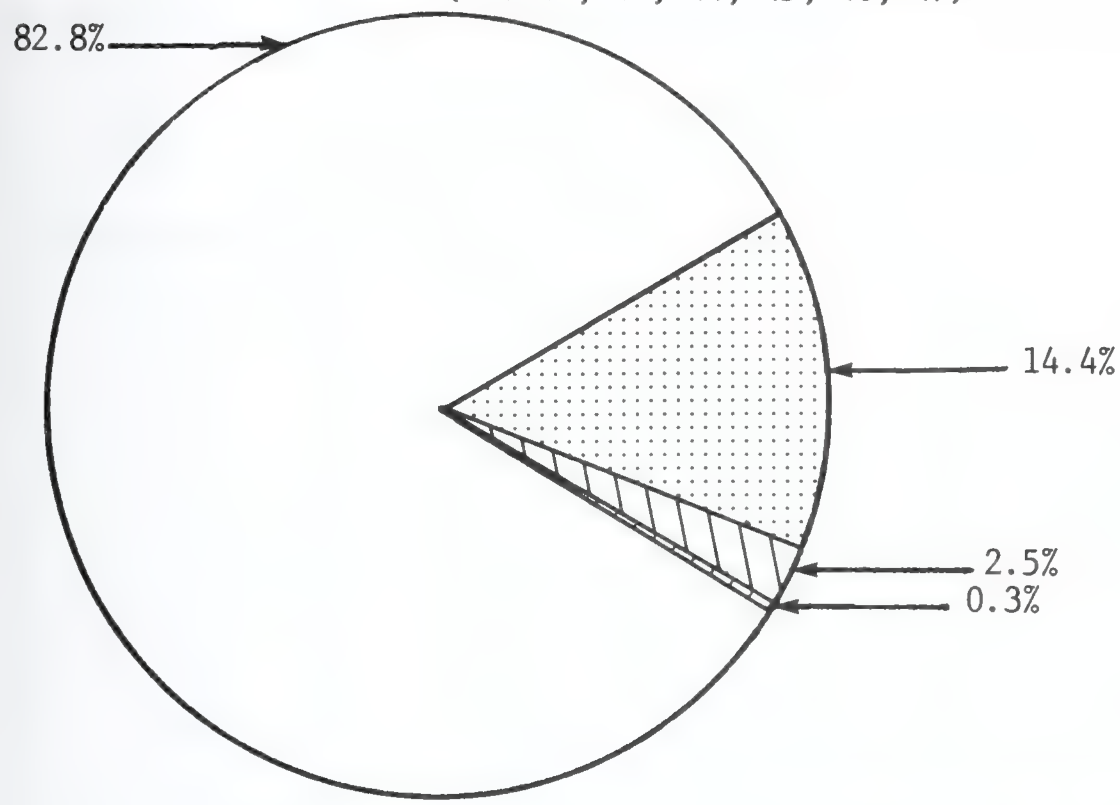
  - Annual expenditures for office equipment were $183 million or $131 per employee.

  - Annual expenditures for communications equipment and services in the transportation sector were $481 million or $346 per employee.

EXHIBIT V-47

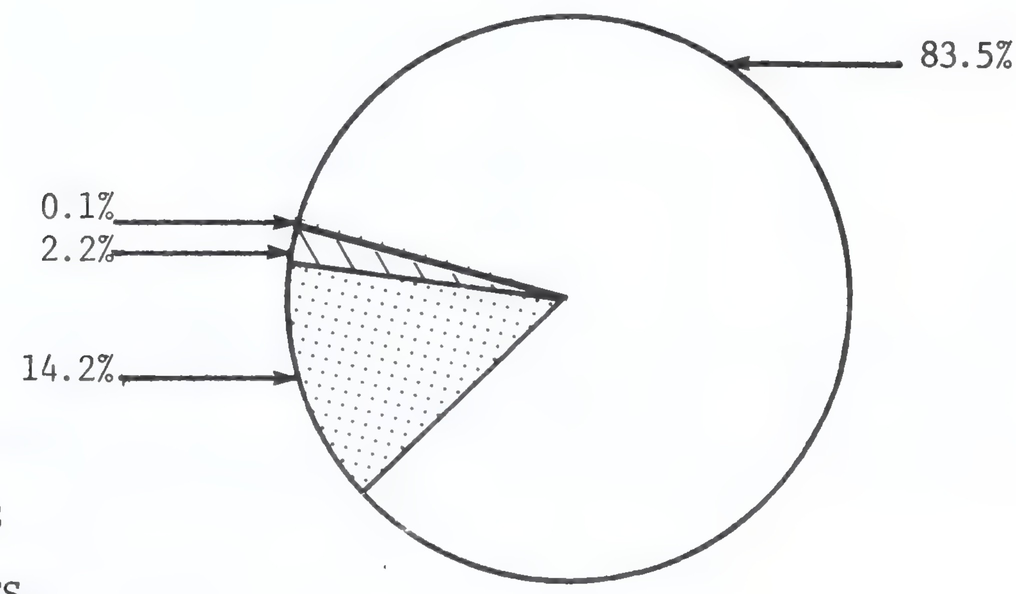
STRUCTURE OF TRANSPORTATION & MOTOR FREIGHT INDUSTRIES (BY SIZE OF ESTABLISHMENT, 1975)

TRANSPORTATION
(SIC 41, 42, 44, 45, 46, 47)



104,972 Establishments

MOTOR FREIGHT AND WAREHOUSING
(SIC 42)



70,991 Establishments

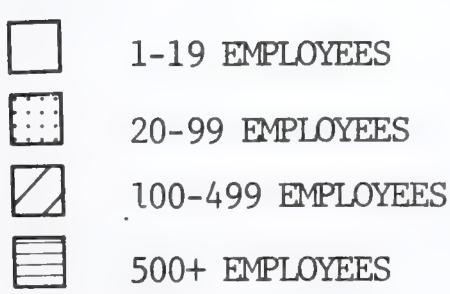


EXHIBIT V-48

DISTRIBUTION OF MOTOR FREIGHT AND WAREHOUSING ESTABLISHMENTS (BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	1203	1.7 %	MT	453	0.1%
AK	137	0.2	NE	996	1.4
AZ	373	0.5	NV	164	0.2
AR	856	1.2	NH	283	0.4
CA	6633	9.4	NJ	2956	4.2
CO	777	1.1	NM	315	0.4
CT	769	1.1	NY	5305	7.5
DE	172	0.2	NC	1676	2.4
DC	108	0.2	ND	402	0.6
FL	1924	2.7	OH	3377	4.8
GA	1377	1.9	OK	942	1.3
HI	158	0.2	OR	1123	1.6
ID	413	0.6	PA	4012	5.7
IL	3910	5.5	RI	254	0.4
IN	1702	2.4	SC	765	1.1
IA	1958	2.8	SD	475	0.7
KS	1291	1.8	TN	1295	1.8
KY	1528	2.2	TX	3809	5.4
LA	579	0.8	UT	376	0.5
ME	467	0.7	VT	233	0.3
MD	1090	1.5	VA	1693	2.4
MA	1746	2.5	WA	1221	1.7
MI	2041	2.9	WV	709	1.0
MN	1959	2.8	WI	1958	2.8
MS	716	1.0	WY	258	0.4
MO	1983	2.8			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				70,920	100.0%

EXHIBIT V-49

MOTOR FREIGHT AND WAREHOUSING: EDP EQUIPMENT INSTALLED

(BY TYPE AND SIZE OF ESTABLISHMENT)

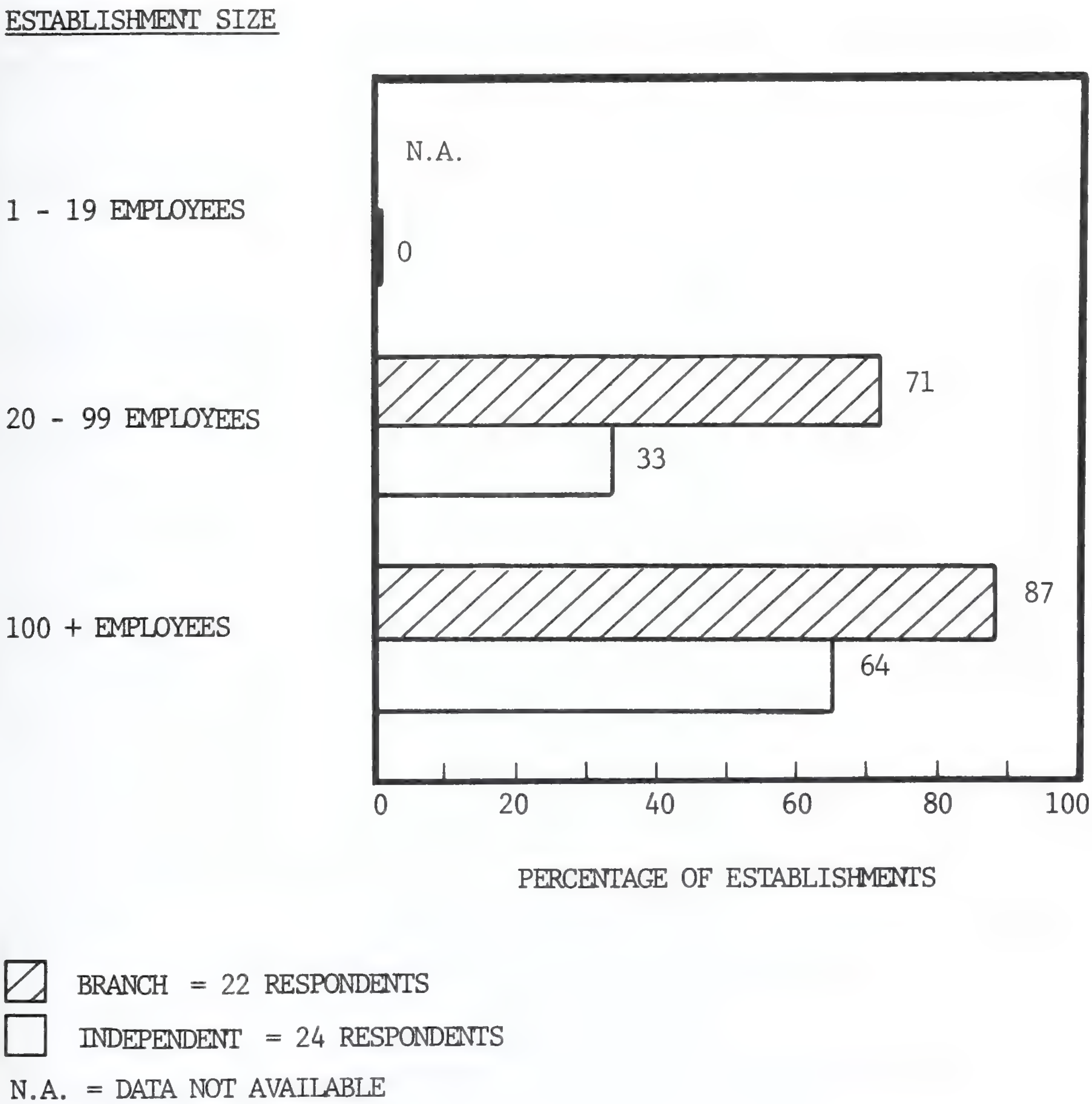


EXHIBIT V-50

MOTOR FREIGHT AND WAREHOUSING:

USE OF COMPUTER SERVICES - BRANCHES

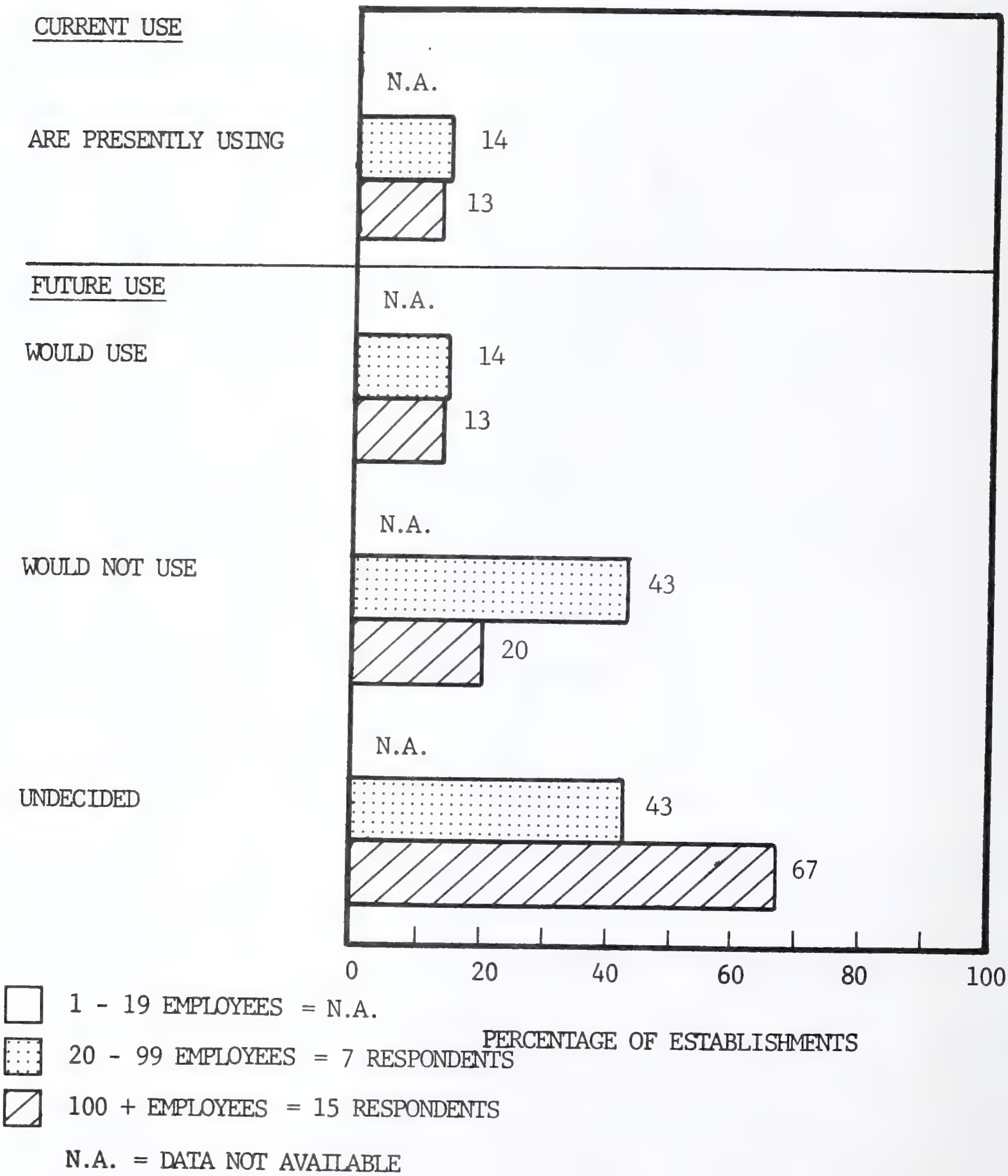


EXHIBIT V-51

MOTOR FREIGHT AND WAREHOUSING:

USE OF COMPUTER SERVICES - INDEPENDENTS

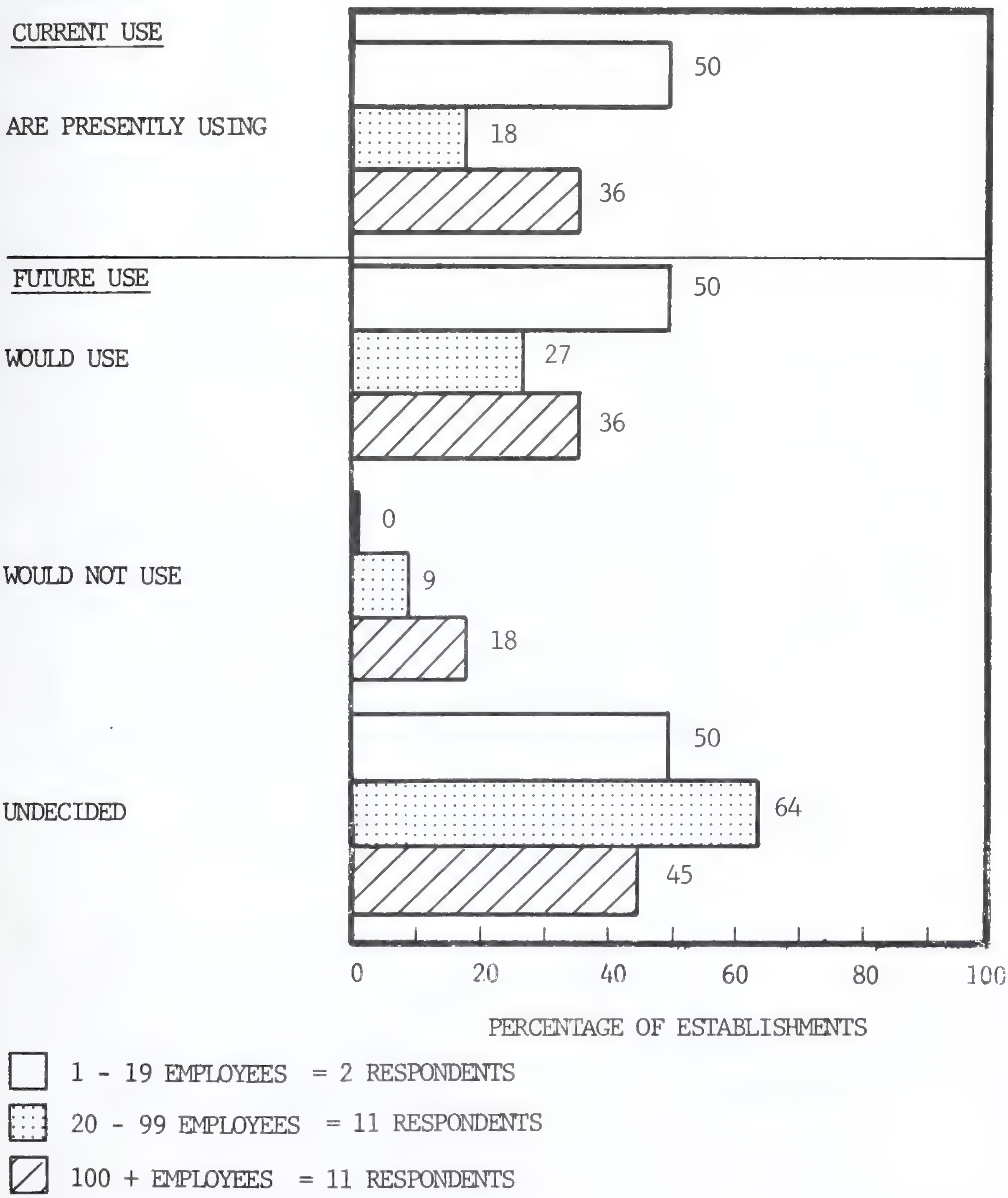


EXHIBIT V-52

MOTOR FREIGHT AND WAREHOUSING: PERCENTAGE OF USERS OF COMPUTER EQUIPMENT OR SERVICES OR BOTH (BY SIZE OF ESTABLISHMENT)

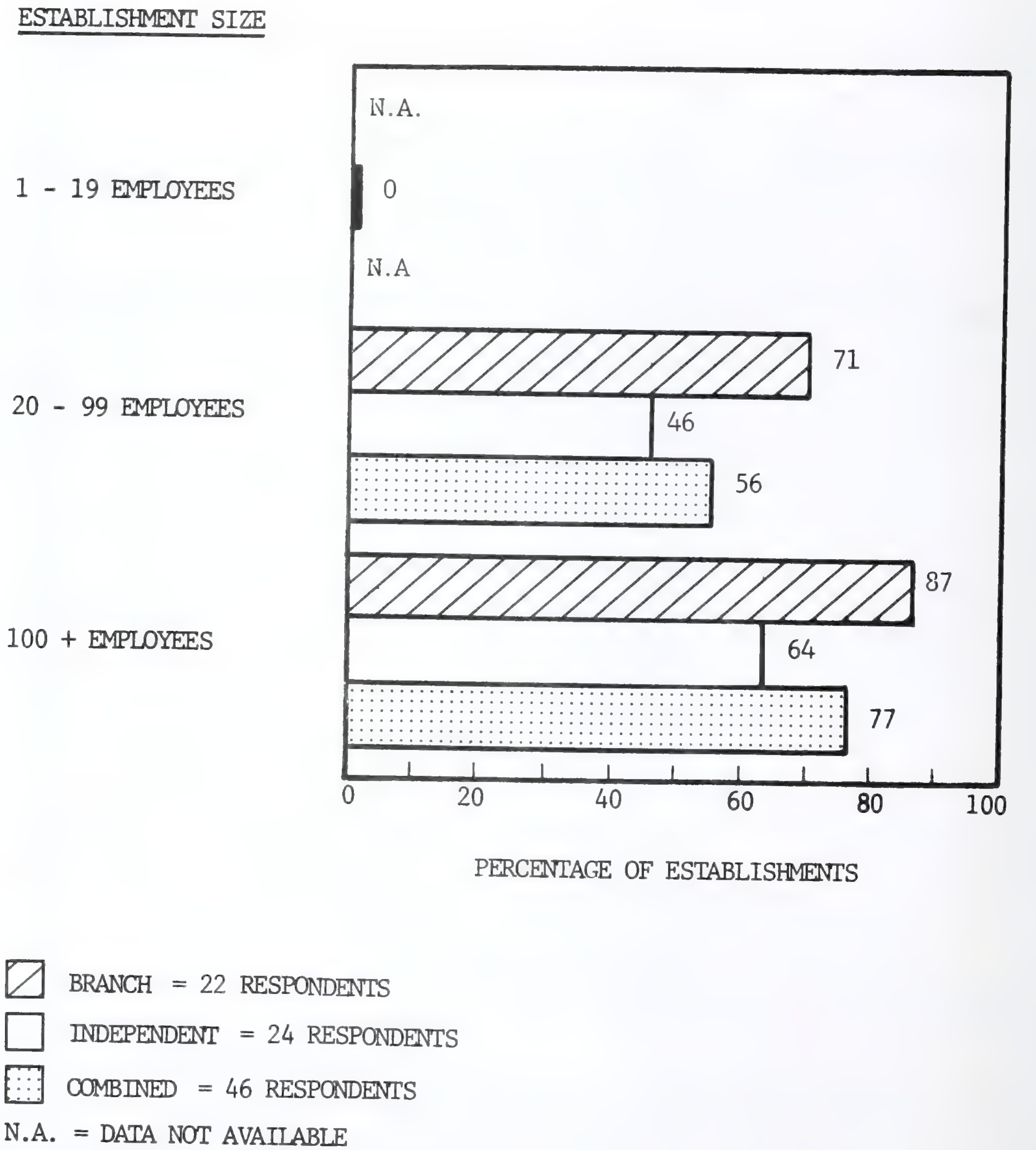


EXHIBIT V-53

MOTOR FREIGHT AND WAREHOUSING: USERS OF OFFICE AUTOMATION (BY SIZE OF ESTABLISHMENT)

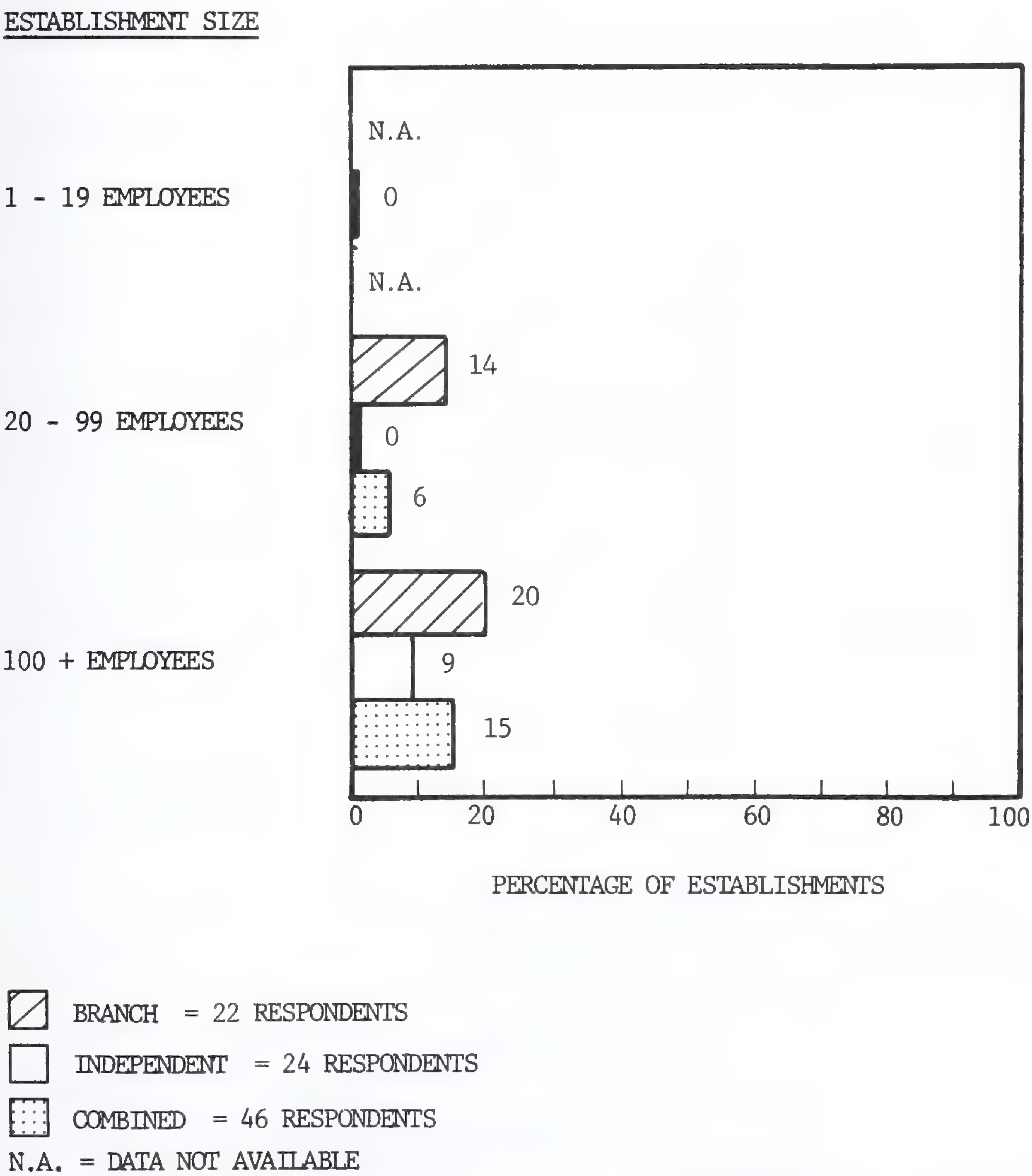
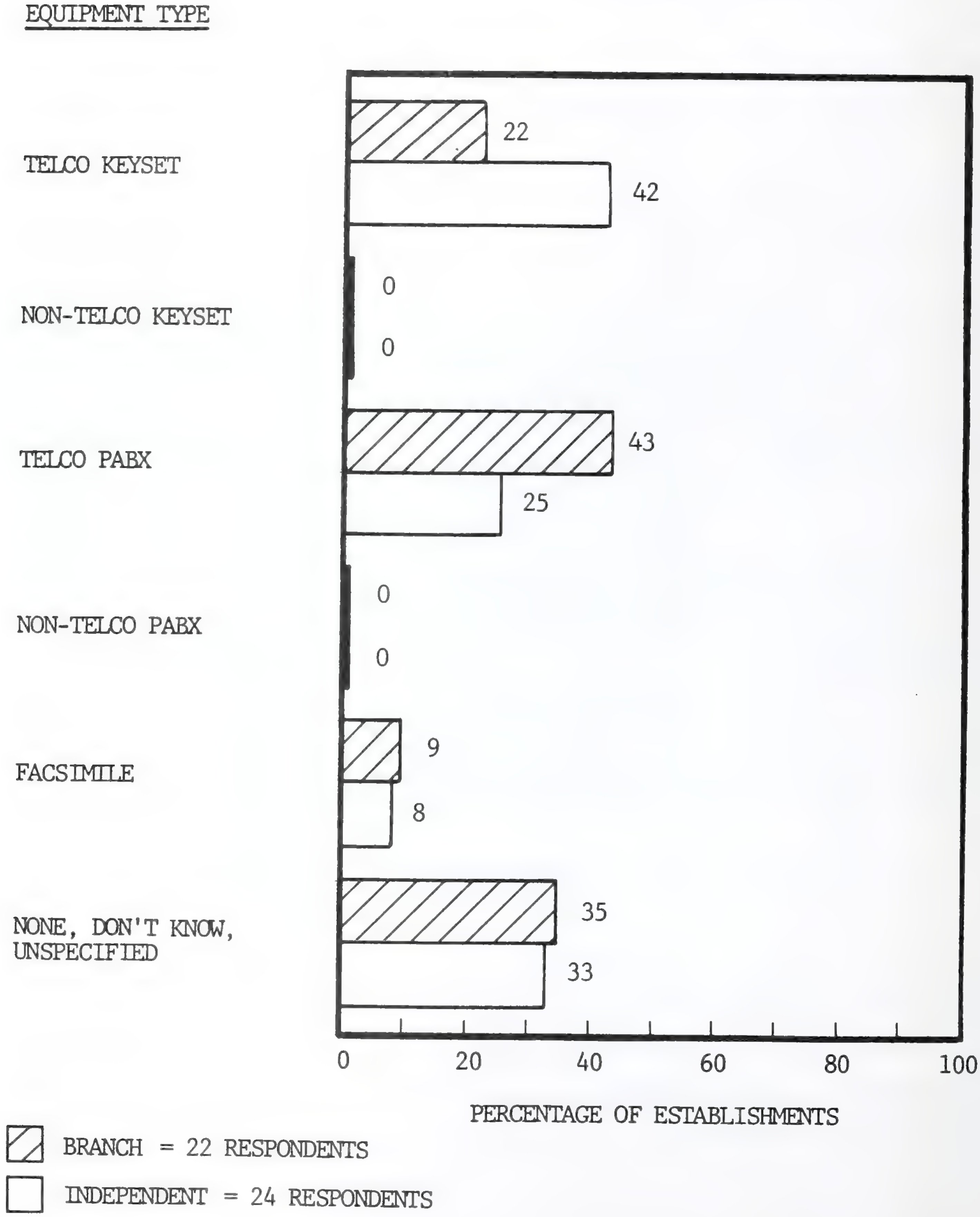


EXHIBIT V-54

MOTOR FREIGHT AND WAREHOUSING: COMMUNICATIONS EQUIPMENT

INSTALLED - BRANCHES AND INDEPENDENTS



INP

EXHIBIT V-55

MOTOR FREIGHT AND WAREHOUSING: COMMUNICATIONS SERVICES

INSTALLED - BRANCHES AND INDEPENDENTS

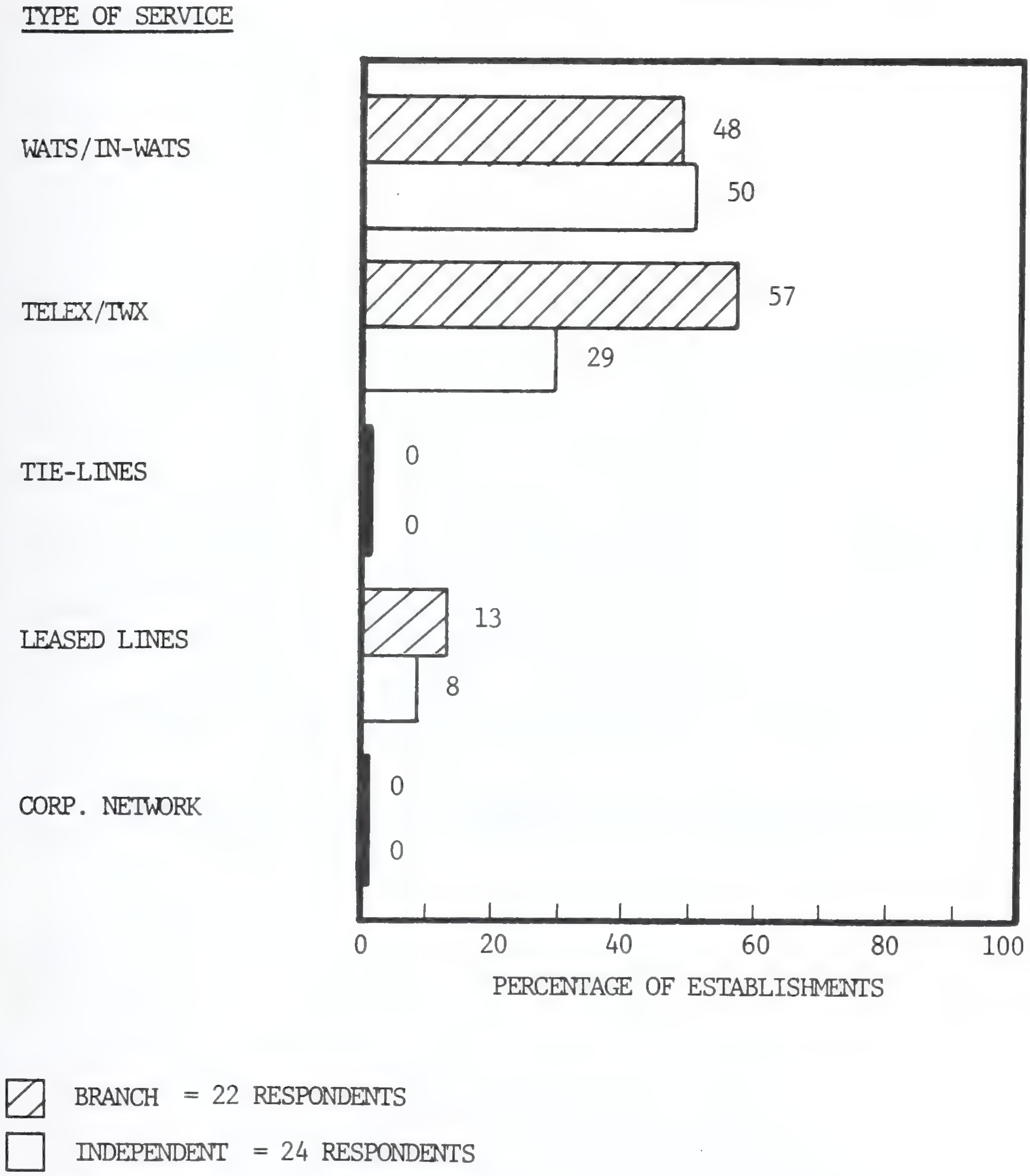


EXHIBIT V-56

MOTOR FREIGHT AND WAREHOUSING: USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

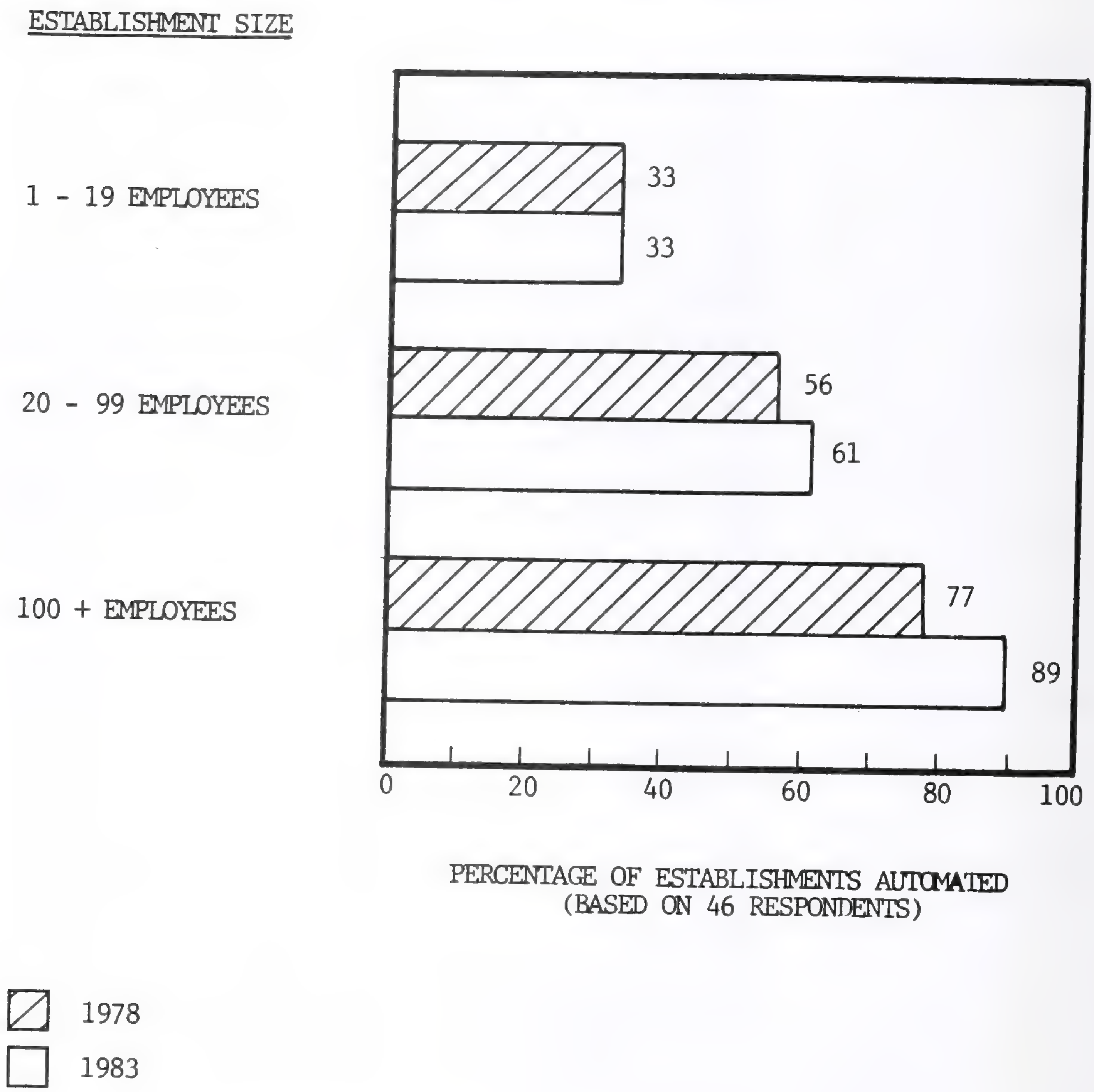
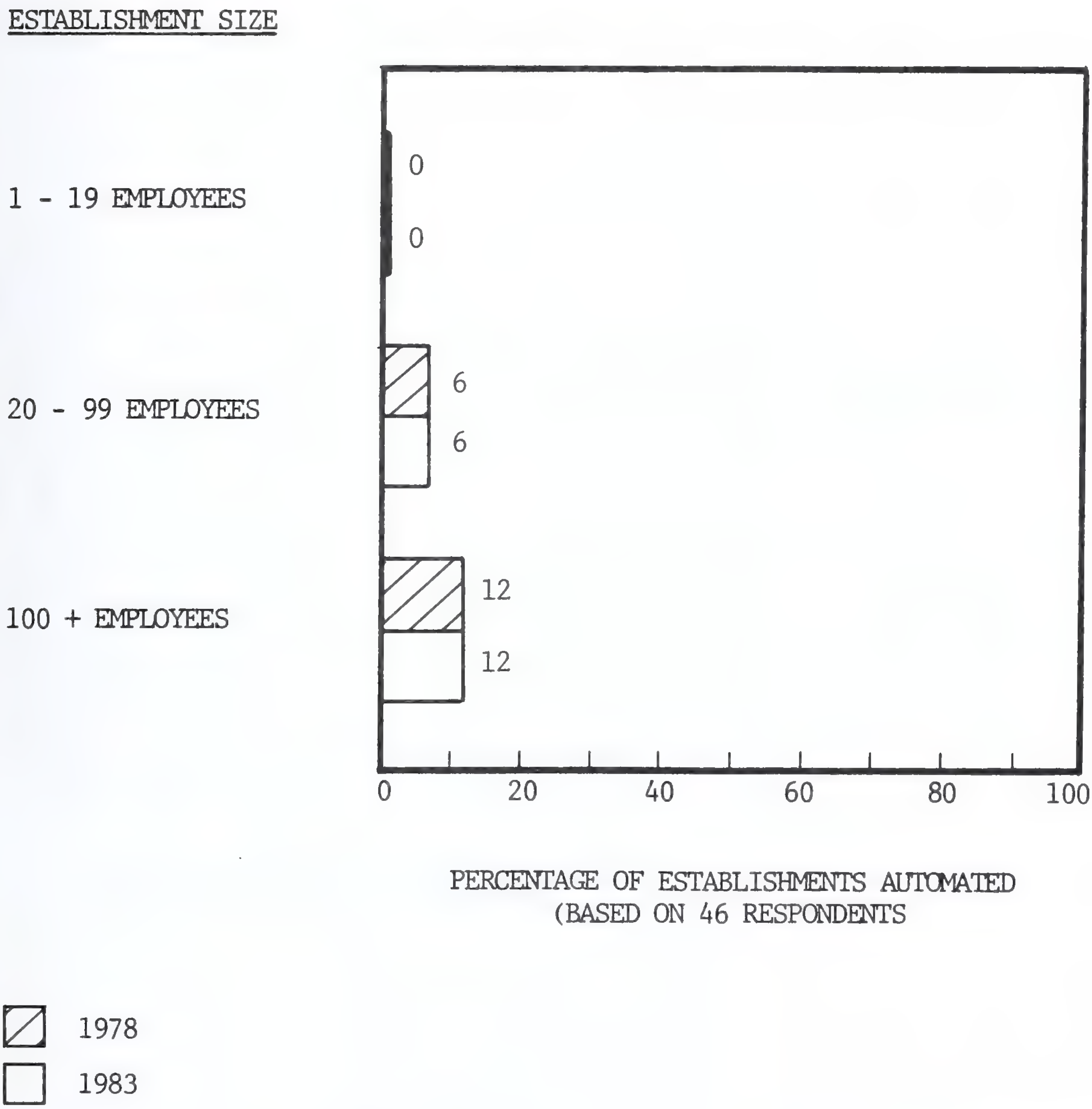


EXHIBIT V-57

MOTOR FREIGHT AND WAREHOUSING: USE OF EDP FOR SALES/MARKETING FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)



INPUT

EXHIBIT V-58

MOTOR FREIGHT AND WAREHOUSING: USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

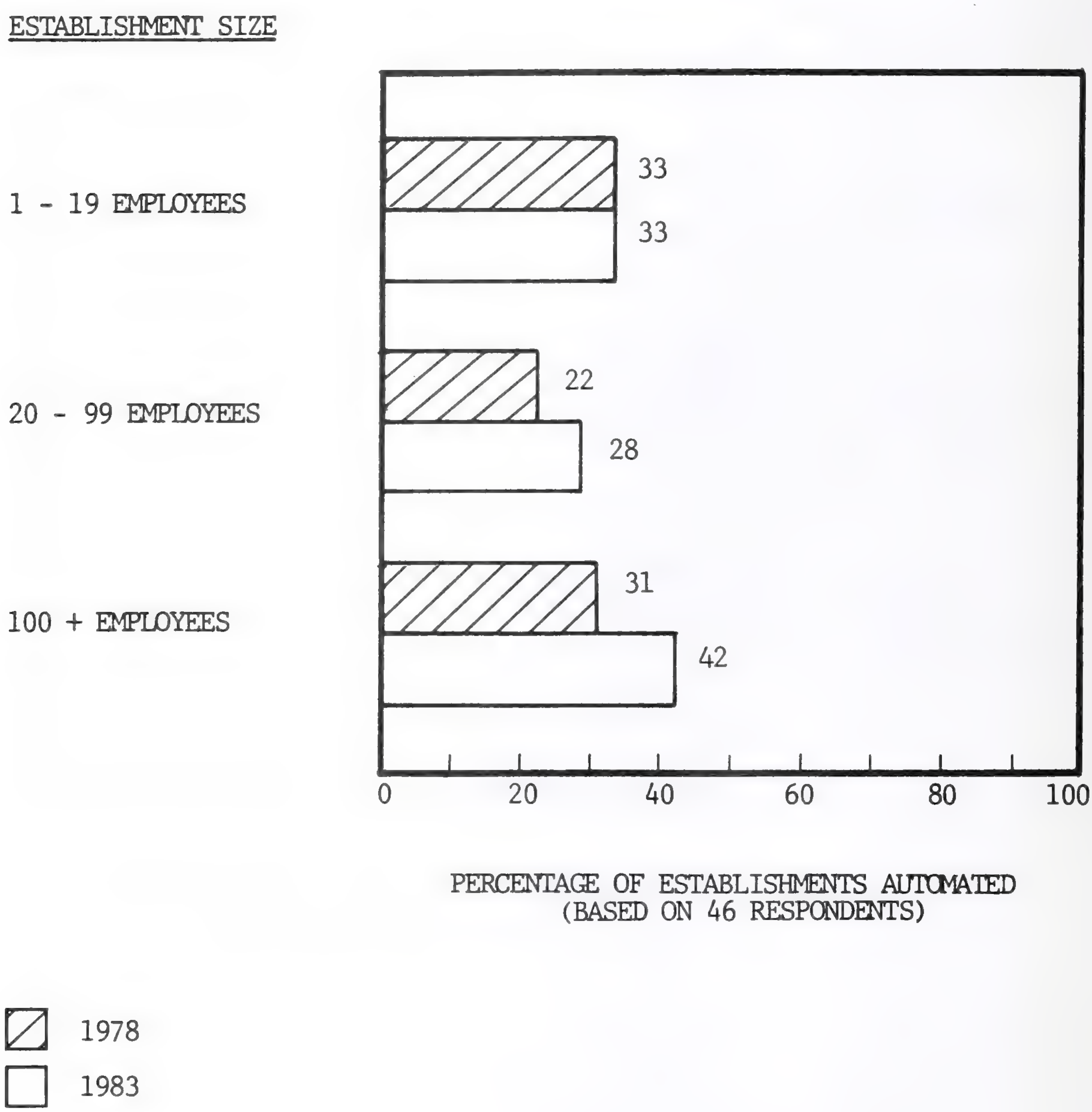


EXHIBIT V-59

MOTOR FREIGHT AND WAREHOUSING: ADMINISTRATIVE/SALES APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=24)			BRANCHES (N=22)		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	36%	9%	-	4%	13%	-
Sales Analysis	36	9	-	4	13	-
Credit Authorization	18	9	-	4	4	-
Other Marketing	-	9	-	-	-	-
FINANCE & ACCOUNTING						
Payroll	33	58	8	17	65	9
Billing	46	54	4	26	65	4
Accounts Receivable	46	54	4	17	74	4
Accounts Payable	33	46	8	26	61	13
General Ledger	4	29	4	9	26	-
Other Finance	-	-	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-60

MOTOR FREIGHT AND WAREHOUSING:
ADMINISTRATIVE/SALES APPLICATION ANALYSIS - BRANCHES

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES			20 - 99 EMPLOYEES (N=7)			100+ EMPLOYEES (N=15)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N.A.	N.A.	N.A.	-	14%	-	7%	13%	-
Sales Analysis	-	-	-	14	14	-	-	13	-
Credit Authorization	-	-	-	-	14	-	-	7	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	N.A.	N.A.	N.A.	43	29	14	7	87	-
Billing	-	-	-	43	43	14	20	73	-
Accounts Receivable	-	-	-	29	43	14	13	87	-
Accounts Payable	-	-	-	43	43	14	20	73	-
General Ledger	-	-	-	-	-	-	13	40	-
Other Finance	-	-	-	-	-	-	-	-	-

*On each question there was a varying percentage of 'No Responses." Therefore the sum of manual plus automated now may not equal 100%.
N.A. Data Not Available

EXHIBIT V-61

MOTOR FREIGHT AND WAREHOUSING:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS - INDEPENDENTS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=2)			20 - 99 EMPLOYEES (N=11)			100+ EMPLOYEES (N=11)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	-	-	-	27%	-	-	9%	9%	-
Sales Analysis	-	-	-	27	-	-	9	9	-
Credit Authorization	-	-	-	9	-	-	9	9	-
Other Marketing	-	-	-	-	-	-	-	9	-
FINANCE AND ACCOUNTING									
Payroll	50	-	-	36	55	-	27	64	18
Billing	50	-	-	55	45	-	36	64	9
Accounts Receivable	50	-	-	55	45	-	36	64	9
Accounts Payable	-	-	-	36	45	-	36	55	18
General Ledger	-	-	-	-	36	-	9	27	9
Other Finance	-	-	-	-	-	-	-	-	-

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-62

MOTOR FREIGHT AND WAREHOUSING:

INDUSTRY SPECIFIC APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=24)			BRANCHES (N=22)		
	Manual	Automated Now	Automated In 5 Years (Additional)	Manual	Automated Now	Automated In 5 Years (Additional)
Freight Bill Entry	38%	13%	8%	35%	30%	4%
Interline Payables	42	13	17	4	-	-
Shipment Analysis	46	8	4	9	21	-
Rate Analysis	46	13	4	9	13	-
Owner/Operator Accounting	13	-	4	9	-	-
Equipment Inventory	4	-	-	17	26	9
Other	21	4	-	13	9	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-63

MOTOR FREIGHT AND WAREHOUSING: INDUSTRY SPECIFIC APPLICATION ANALYSIS - BRANCHES

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES			20 - 99 EMPLOYEES (N=7)			100+ EMPLOYEES (N=15)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Freight Bill Entry	N.A.	N.A.	N.A.	29%	14%	14%	33%	40%	-
Interline Payables	-	-	-	-	-	-	7	-	-
Shipment Analysis	-	-	-	14	14	14	7	27	-
Rate Analysis	-	-	-	0	0	0	13	20	-
Owner/Operator Accounting	-	-	-	0	0	0	13	-	-
Equipment Inventory	-	-	-	29	29	14	13	27	7
Other	-	-	-	29	-	-	-	13	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.
N.A. = Data Not Available

EXHIBIT V-64

MOTOR FREIGHT AND WAREHOUSING:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=2)			20 - 99 EMPLOYEES (N=11)			100+ EMPLOYEES (N=11)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Freight Bill Entry	50%	-	-	18%	9%	-	55%	18%	9%
Interline Payables	100	-	-	27	18	-	27	9	18
Shipment Analysis	100	-	-	45	9	-	36	9	9
Rate Analysis	100	-	-	45	9	-	36	18	-
Owner/Operator Accounting	50	-	-	9	-	-	9	-	9
Equipment Inventory	-	-	-	-	-	-	9	-	-
Other	-	-	-	9	-	-	36	9	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-65

MOTOR FREIGHT AND WAREHOUSING: EDP, OFFICE, AND COMMUNICATION NEEDS (BY SIZE OF ESTABLISHMENT)

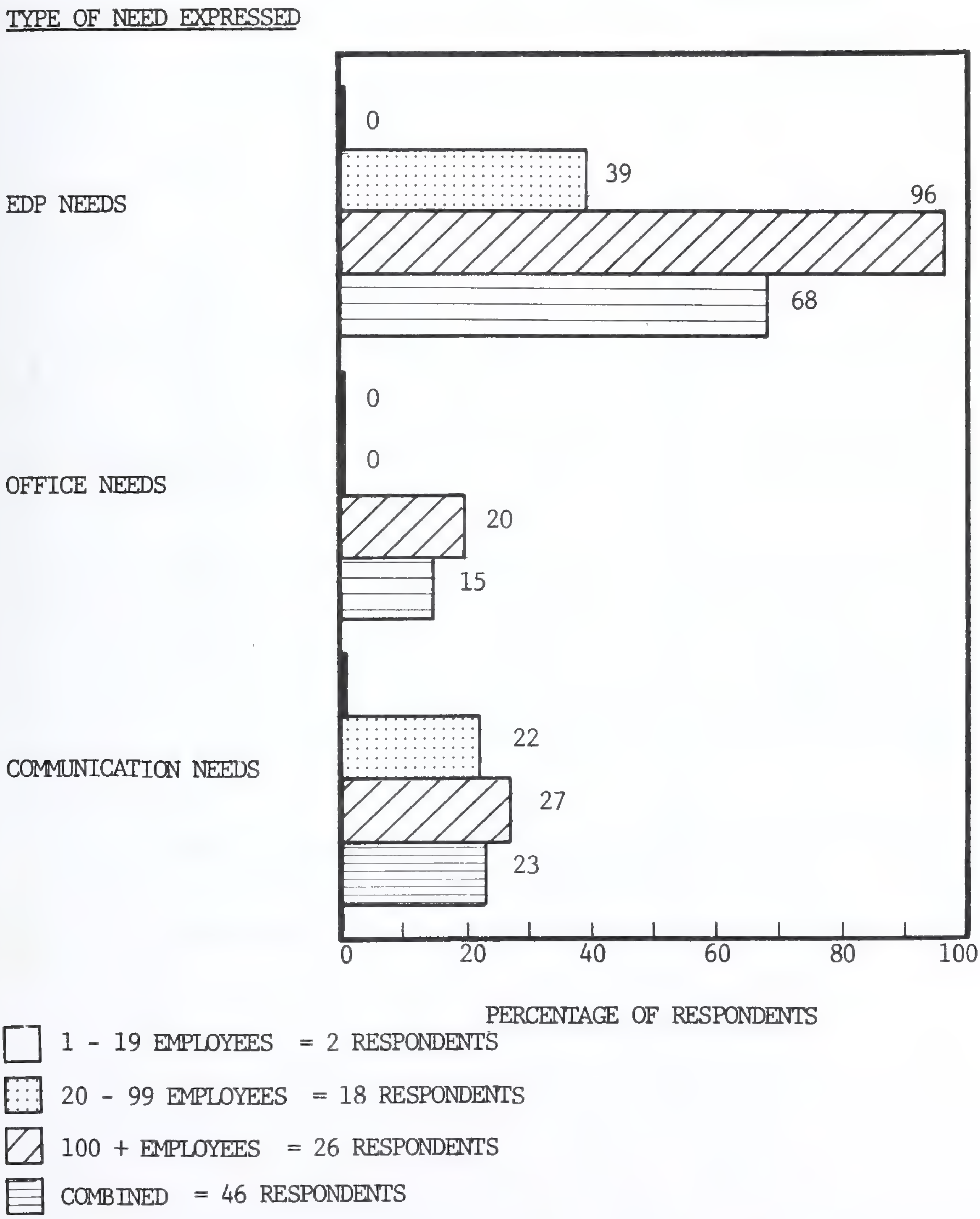


EXHIBIT V-66

TOTAL CURRENT EXPENDITURES
OF THE TRANSPORTATION SECTOR

EXPENDITURE CLASSIFICATION	1 - 19 EMPLOYEES	20 - 99 EMPLOYEES	100 - 499 EMPLOYEES	TOTAL
EDP EQUIPMENT SERVICES, AND SUPPLIES	$38.1M	$79.0M	$90.9M	$208M
OFFICE EQUIPMENT	$56.2M	$69.0M	$57.8M	$183M
COMMUNICATIONS EQUIPMENT AND SERVICES	$147.7M	$181.3M	$152.0M	$481M
TOTAL	$242.0M	$329.3M	$300.7M	$872M

EXHIBIT V-67

AVERAGE CURRENT EXPENDITURES OF THE TRANSPORTATION SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$149	0.6%
OFFICE EQUIPMENT	131	0.5
COMMUNICATIONS EQUIPMENT & SERVICES	346	1.4

E. UTILITIES

E. UTILITIES

1. INDUSTRY CHARACTERISTICS

- The utilities sector is characterized by many small establishments currently using and desiring more automated equipment and services. Penetration of both computer equipment and outside computer services, as well as the use of word processing equipment, is far above the average for all small establishments. However, there was no reported use of communications interconnect equipment. Further needs for computer equipment or services have been expressed by half of all respondents, but few respondents expressed needs for office or communications equipment or services.

- The utilities sector is comprised almost entirely of small establishments (see Exhibit V-68). Over 20,000 establishments, more than 97 percent of all establishments in the utilities sector, have less than 500 employees, and altogether employ 1.02 million people. The industries contained in the utilities sector are:

  - Communications services (SIC 48).

  - Electric, gas, and sanitary services (SIC 49).

- Independent establishments only were surveyed for this sector.

- Small establishments of the utilities sector spend $1.0 billion annually on equipment and services, including:

  - EDP equipment.

  - EDP services.

- Office equipment.

- Communications equipment.

- Communications services.

- Supplies.

- The industry subsector which is the focus of this section is the electric, gas, and sanitary services industry (SIC 49). The electric, gas, and sanitary services industry follows the general trends found in the utilities sector.

- There are slight regional concentrations in the electric, gas, and sanitary services industry, as shown in Exhibit V-69 where California and Texas each have 9.1 percent of the establishments with less than 500 employees.

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

- Most establishments reported that they have EDP equipment on site (see Exhibit V-70), ranging from 60 percent of the smallest establishments to 100 percent of the largest establishment size group.

- The remainder of respondents all used computer services and 10 percent of respondents used both services and their own equipment (see Exhibit V-71).

- Consequently EDP penetration in the electric, gas, and sanitary services industry is 100 percent (see Exhibit V-72). The electric, gas, and sanitary services industry was the only industry which had 100 percent penetration of EDP equipment or services.

- There is above average acceptance of word processing equipment in the electric, gas, and sanitary services industry. Almost one-third of all respondents were using word processing equipment (see Exhibit V-73). Forty-three percent of respondents from establishments with more than 100 employees

stated that they use automated office equipment, and use by the smallest size group of establishments was tied for the highest rate reported by any industry.

- All respondents use switching communications equipment (keyset or PABX - see Exhibit V-74) supplied by the local telephone company, but 10 percent of respondents stated needs which could be met by interconnect equipment.

- There is little usage of other-than-DDD communications services in the electric, gas, and sanitary services industry (see Exhibit V-75). Only 10 percent of respondents used WATS services, and less than 10 percent of respondents used other communication services.

- No respondent specified any use of interconnect equipment, but one respondent reported using their own microwave system for internal communications, and several reported using radio transmission for the same purpose.

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-76 and V-77 show that all respondents use EDP for administrative functions, and almost all use EDP for industry specific functions as well.

  - One hundred percent of establishments used EDP for administrative functions.

- Ninety percent of all respondents cited EDP applications for industry specific functions.

- Billing is obviously the primary administrative application for electric, gas, and sanitary services establishments (see Exhibit V-78):

  - All respondents use EDP for billing applications. Thirty percent of respondents have plans to automate the other administrative applications.

  - Usage of EDP for all administrative applications is currently greatest in establishments with more than 100 employees (see Exhibit V-79), but all establishments in the two larger size groups expect administrative applications to be automated within the next five years.

- The most frequent use of EDP in an industry specific application is for maintaining customer records. Seventy-five percent of all respondents report using EDP for this application (see Exhibit V-80).

- In general, there are many plans to automate the remaining industry specific applications in the next five years (see Exhibit V-81).

4. EDP, OFFICE AND COMMUNICATION NEEDS

- In the electric, gas, and sanitary services industry, half of all respondent establishments stated further needs for EDP equipment or services but few stated that they have office or communications needs (see Exhibit V-82). The low level of expressed office or communications needs should be considered in light of the relatively high current use of automation in planning market strategies:

  - Fifty percent of respondents expressed further EDP needs.

- Only 5 percent of respondents expressed further office needs. All needs were expressed by respondents from establishments with 20 to 99 employees.

- Ten percent of respondents expressed communications needs which can be met by interconnect equipment; all were expressed by establishments with 20 to 99 employees.

- EDP needs are typical of companies that have had experience with computers, and are now looking to use them more effectively in all areas of operation. Respondents made the following comments:

  - "Need a medium sized computer to handle increased operations."

  - "Need more memory and room for data."

  - "Getting programs usable on the computer."

  - "Better utilization of computer by adding more applications."

  - "When three-year lease is up on our present computer, will move to a large system."

- Communications needs were expressed by 25 percent of establishments with between 20 to 99 employees, including both more capacity and additional functions; for example:

  - "Increase the number of trunks."

  - "Use computer for switching and data communications."

5. EXPENDITURES

- Expenditures for EDP, office and communications equipment and services were over 1.0 billion dollars annually in the utilities sector, as shown in Exhibits V-83 and V-84. Over 44 percent of expenditures for automated equipment, services, and supplies were from establishments with less than 100 employees.

  - Annual expenditures for EDP equipment, services and supplies were $256 million or $250 per employee. Expenditures for EDP equipment, services, and supplies were 1.1 percent of gross sales in the utilities sector. This is the second highest rate of expenditure for EDP equipment by any industry in this report.

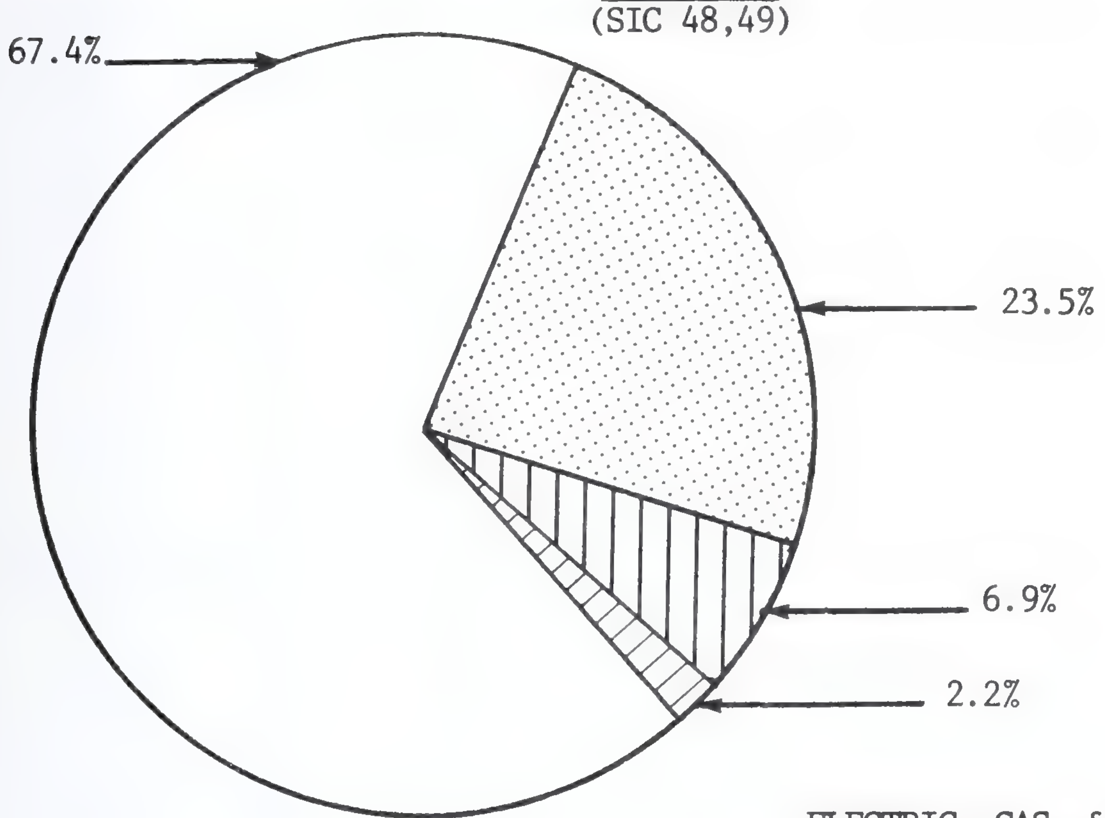
  - Annual expenditures for office equipment were $225 million or $220 per employee. Expenditures for office equipment were 1.0 percent of gross sales in the utilities sector. This is the second highest rate of expenditure for office equipment by any industry in this report.

  - Annual expenditures for communications equipment and services were $592 million or $579 per employee. Expenditures for communications equipment and services in the utilities sector were 2.6 percent of gross sales. This is the second highest rate of expenditure for communications by any industry in this report.

EXHIBIT V-68

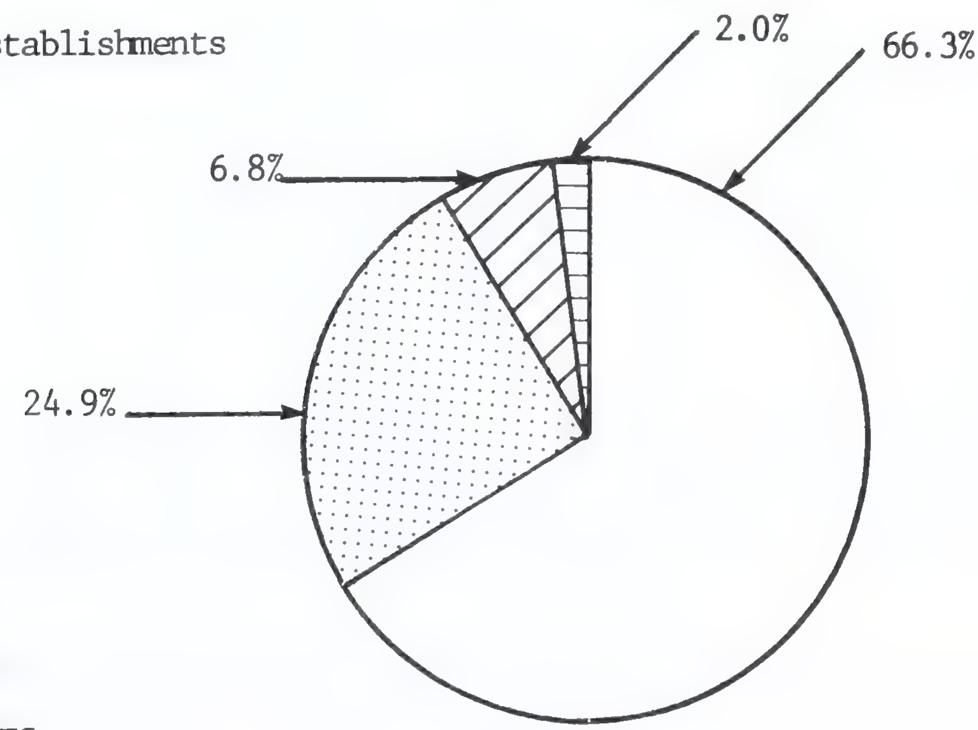
STRUCTURE OF UTILITIES AND ELECTRIC, GAS, & SANITARY SERVICES INDUSTRIES (BY SIZE OF ESTABLISHMENT, 1975)

UTILITIES
(SIC 48,49)



23,893 Establishments

ELECTRIC, GAS, & SANITARY SERVICES
(SIC 49)



12,700 Establishments

1-19 EMPLOYEES
20-99 EMPLOYEES
100-499 EMPLOYEES
500+ EMPLOYEES

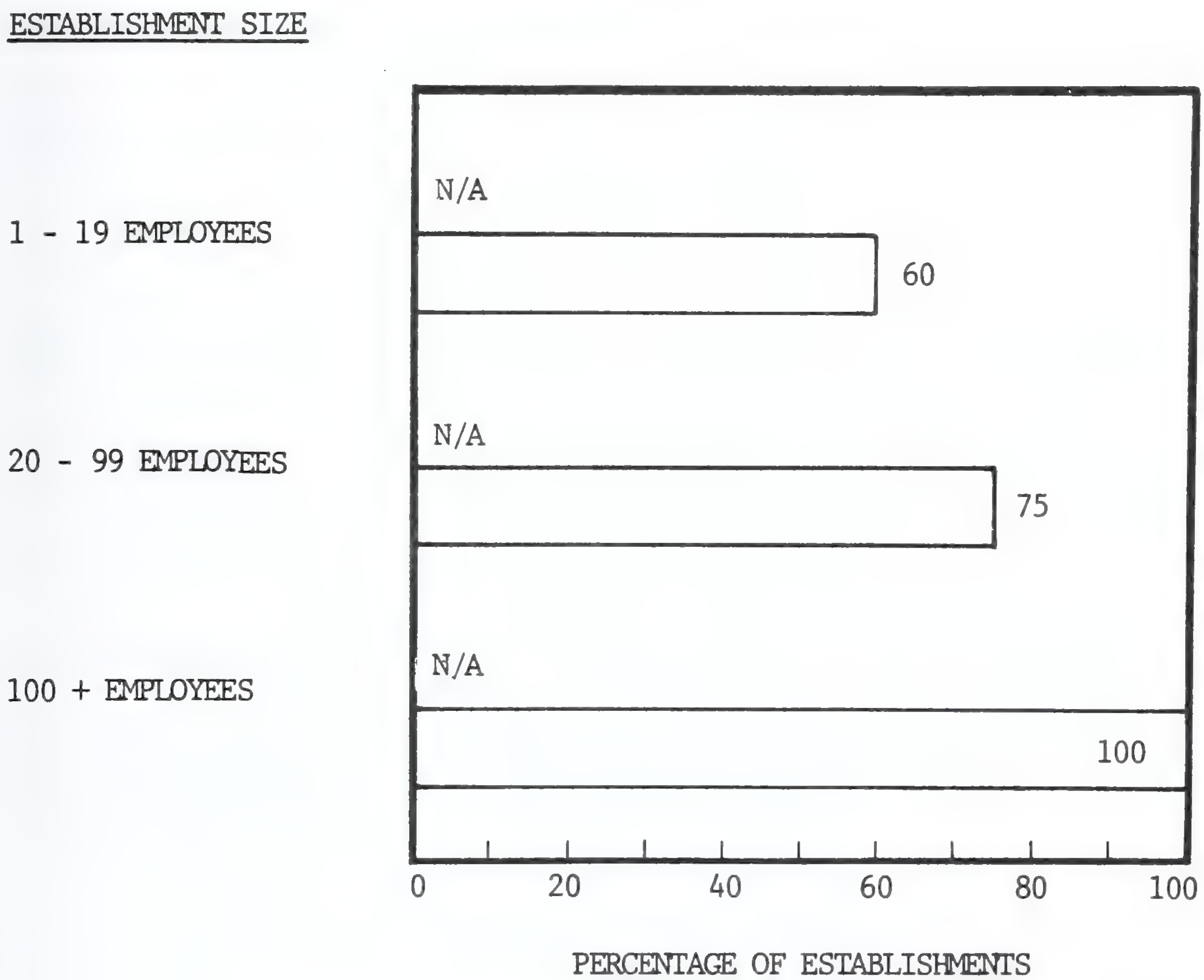
EXHIBIT V-69

DISTRIBUTION OF ELECTRIC, GAS, AND SANITARY SERVICES ESTABLISHMENTS (BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	254	2.0%	MT	187	1.5%
AK	43	0.3	NE	57	0.5
AZ	164	1.3	NV	49	0.4
AR	233	1.9	NH	69	0.6
CA	1129	9.1	NJ	385	3.1
CO	178	1.4	NM	142	1.1
CT	146	1.2	NY	415	3.3
DE	31	0.2	NC	234	1.9
DC	11	0.1	ND	56	0.4
FL	471	3.8	OH	342	2.7
GA	317	2.5	OK	299	2.4
HI	23	0.2	OR	175	1.4
ID	151	1.2	PA	708	5.7
IL	464	3.7	RI	39	0.3
IN	328	2.6	SC	113	0.9
IA	223	1.8	SD	106	0.9
KS	153	1.2	TN	153	1.2
KY	399	3.2	TX	1135	9.1
LA	298	2.4	UT	68	0.5
ME	124	1.0	VT	46	0.4
MD	107	0.9	VA	197	1.6
MA	241	1.9	WA	235	1.9
MI	350	2.8	WV	200	1.6
MN	226	1.8	WI	224	1.8
MS	367	2.9	WY	62	0.5
MO	319	2.6			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				12,446	100.0%

EXHIBIT V-70

ELECTRIC, GAS, AND SANITARY SERVICES:
EDP EQUIPMENT INSTALLED
(BY TYPE AND SIZE OF ESTABLISHMENT)



INDEPENDENT = 20 RESPONDENTS

N/A = NOT APPLICABLE

EXHIBIT V-71

ELECTRIC, GAS, AND SANITARY SERVICES:

USE OF COMPUTER SERVICES - INDEPENDENTS

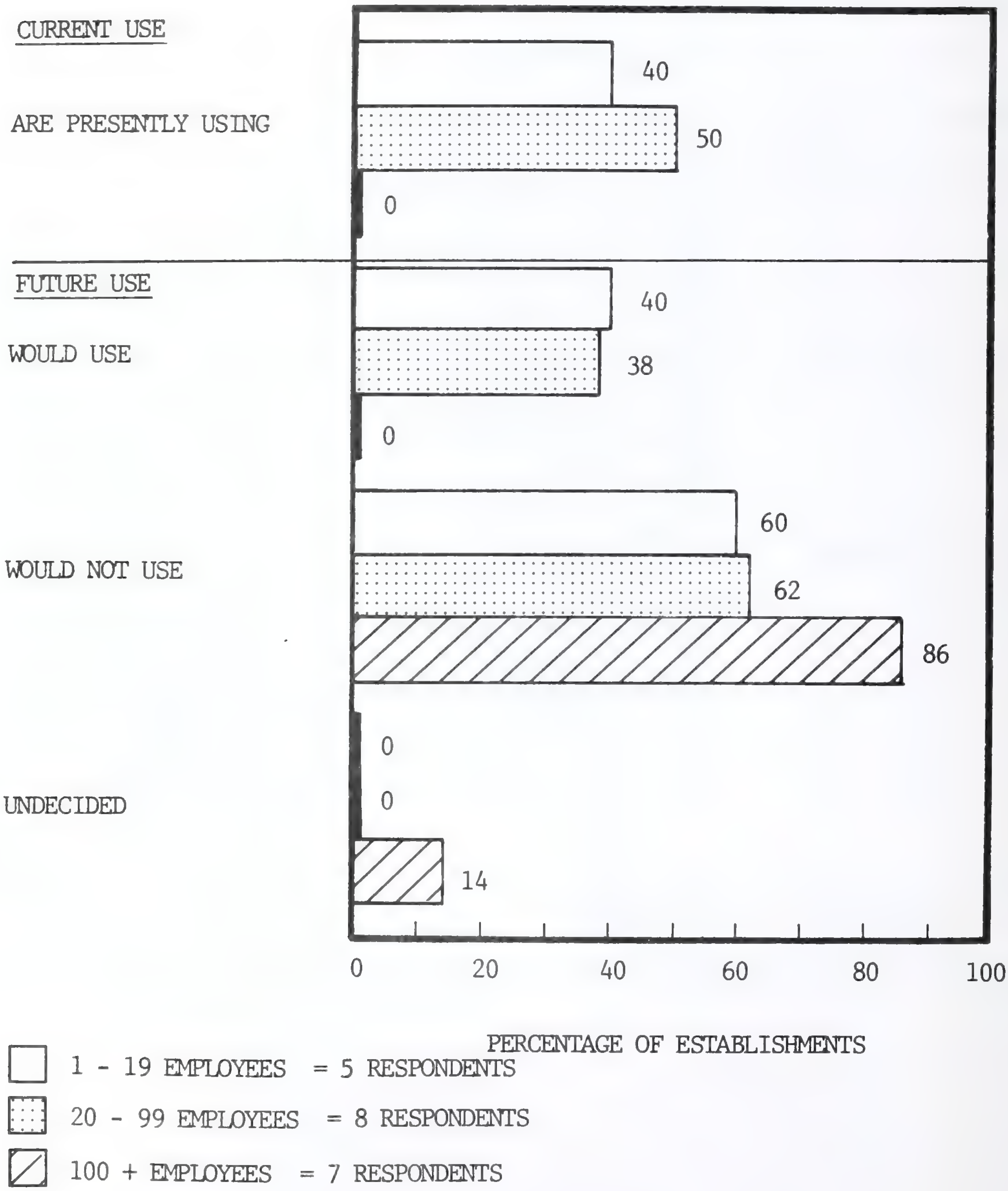


EXHIBIT V-72

ELECTRIC, GAS, AND SANITARY SERVICES:
PENETRATION OF EDP EQUIPMENT/SERVICES
(BY SIZE OF ESTABLISHMENT)

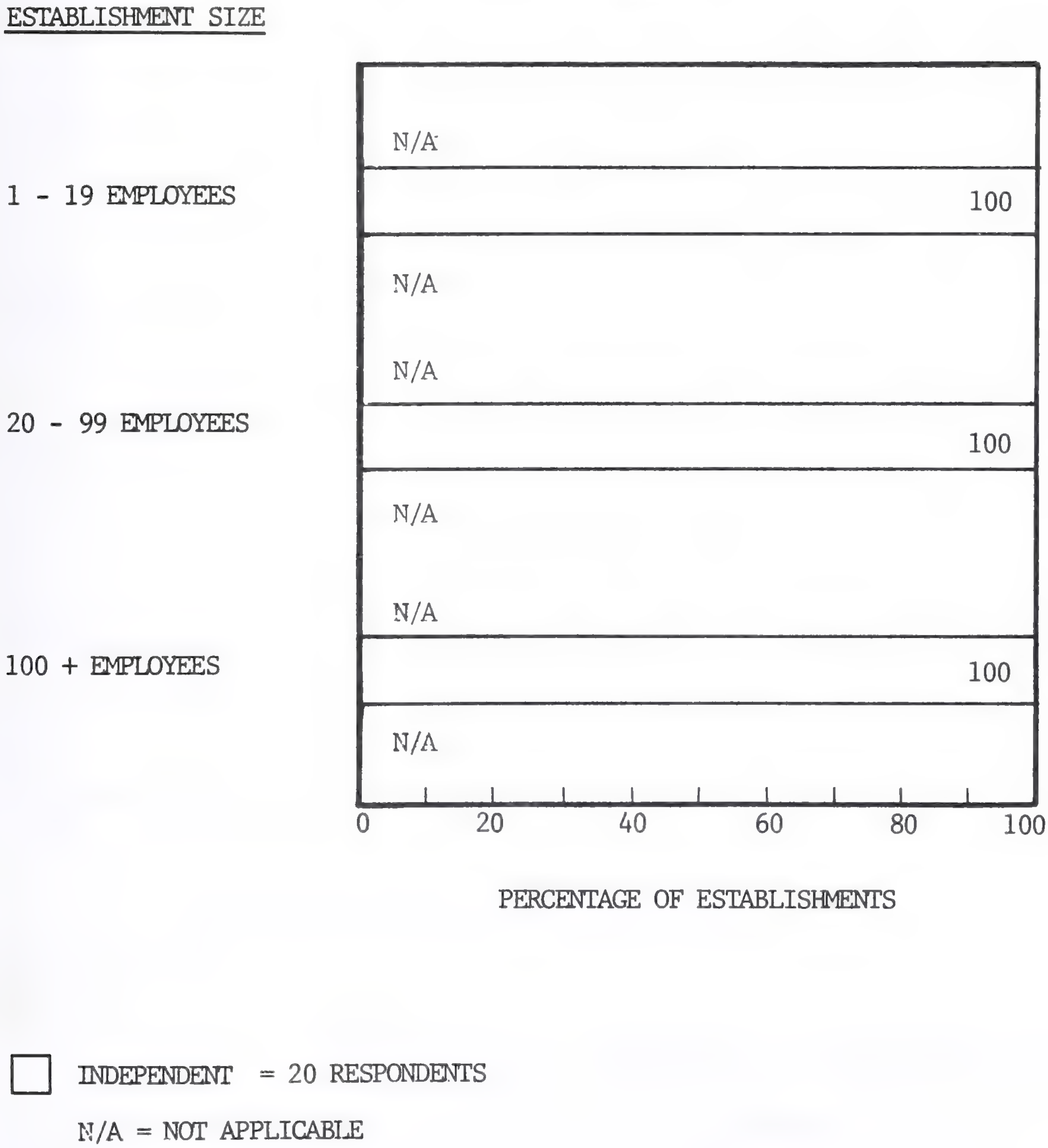


EXHIBIT V-73

ELECTRIC, GAS, AND SANITARY SERVICES:
PENETRATION OF OFFICE AUTOMATION
(BY SIZE OF ESTABLISHMENT)

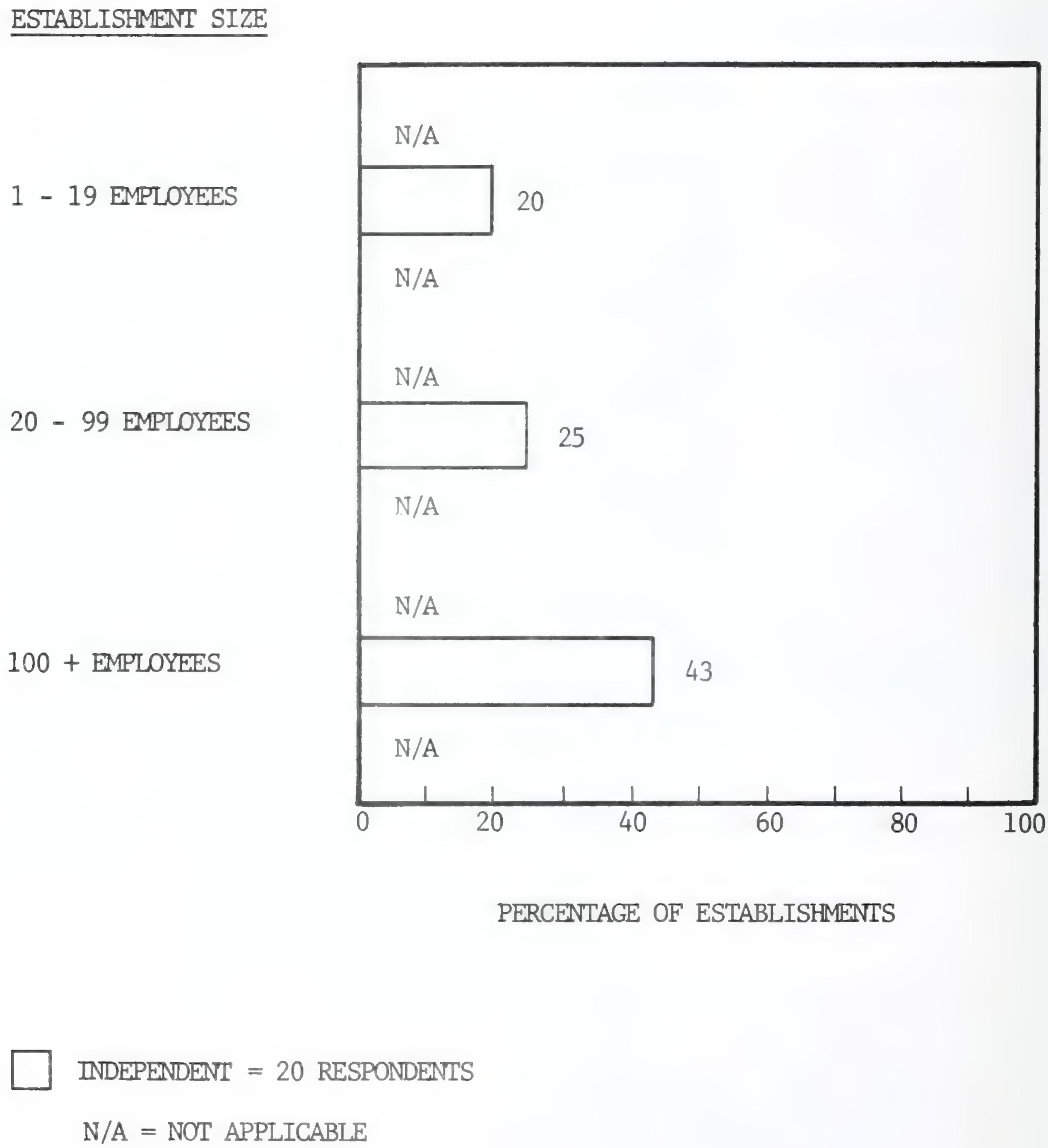


EXHIBIT V-74

ELECTRIC, GAS, AND SANITARY SERVICES:

COMMUNICATIONS EQUIPMENT INSTALLED - INDEPENDENTS

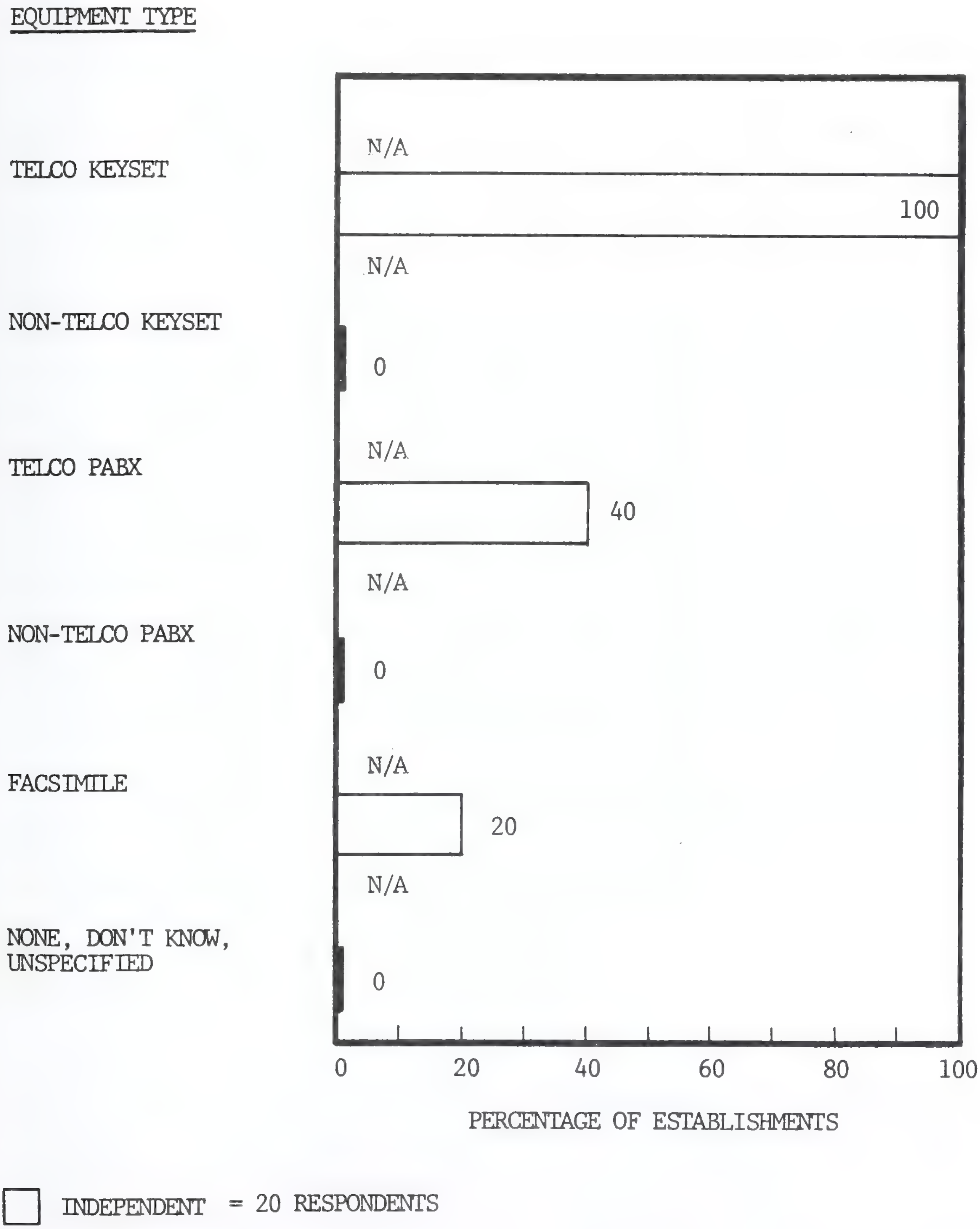


EXHIBIT V-75

ELECTRIC, GAS, AND SANITARY SERVICES:

COMMUNICATIONS SERVICES INSTALLED - INDEPENDENTS

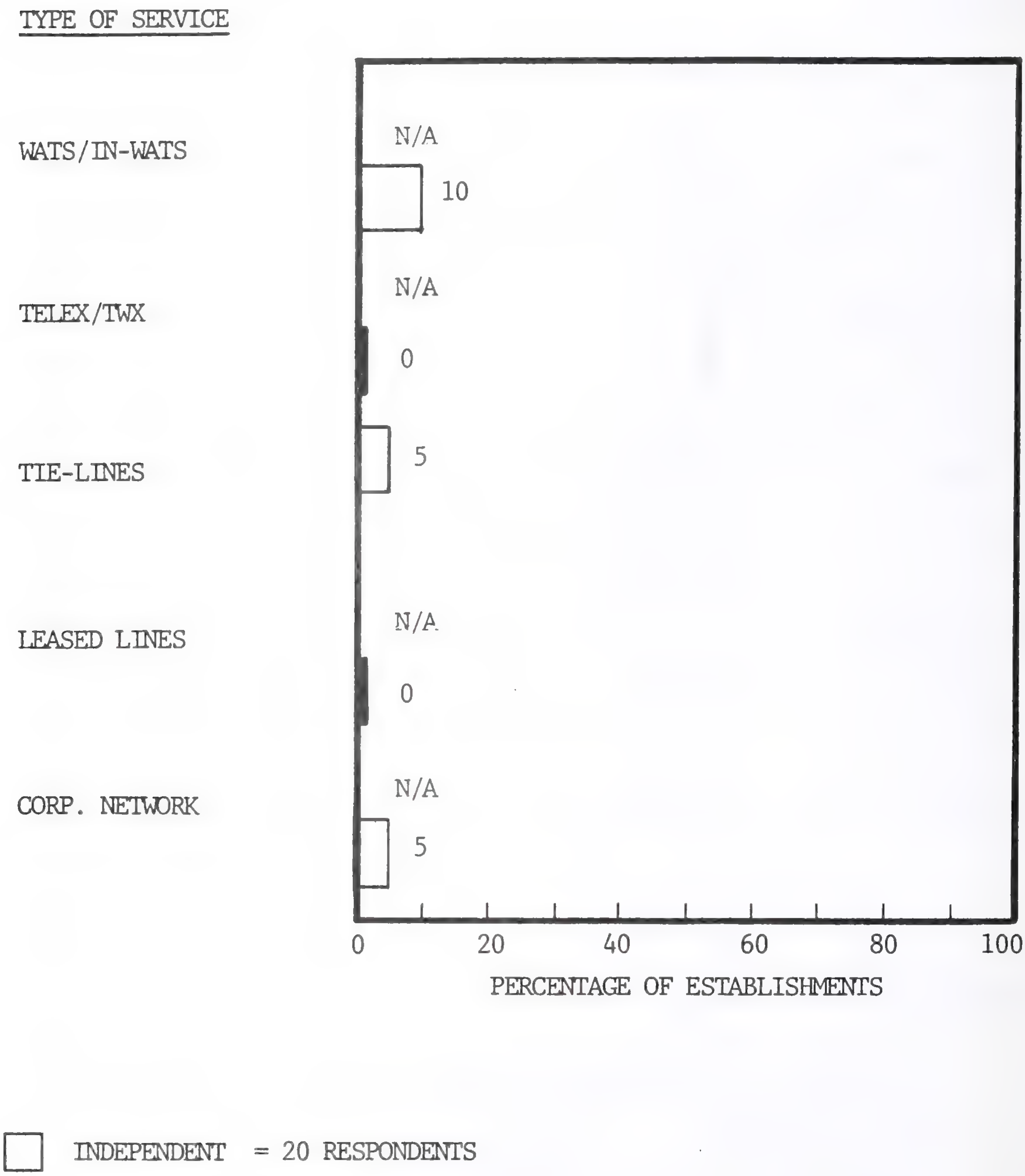


EXHIBIT V-76

ELECTRIC, GAS, AND SANITARY SERVICES:
USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978/1983
(BY SIZE OF ESTABLISHMENT)

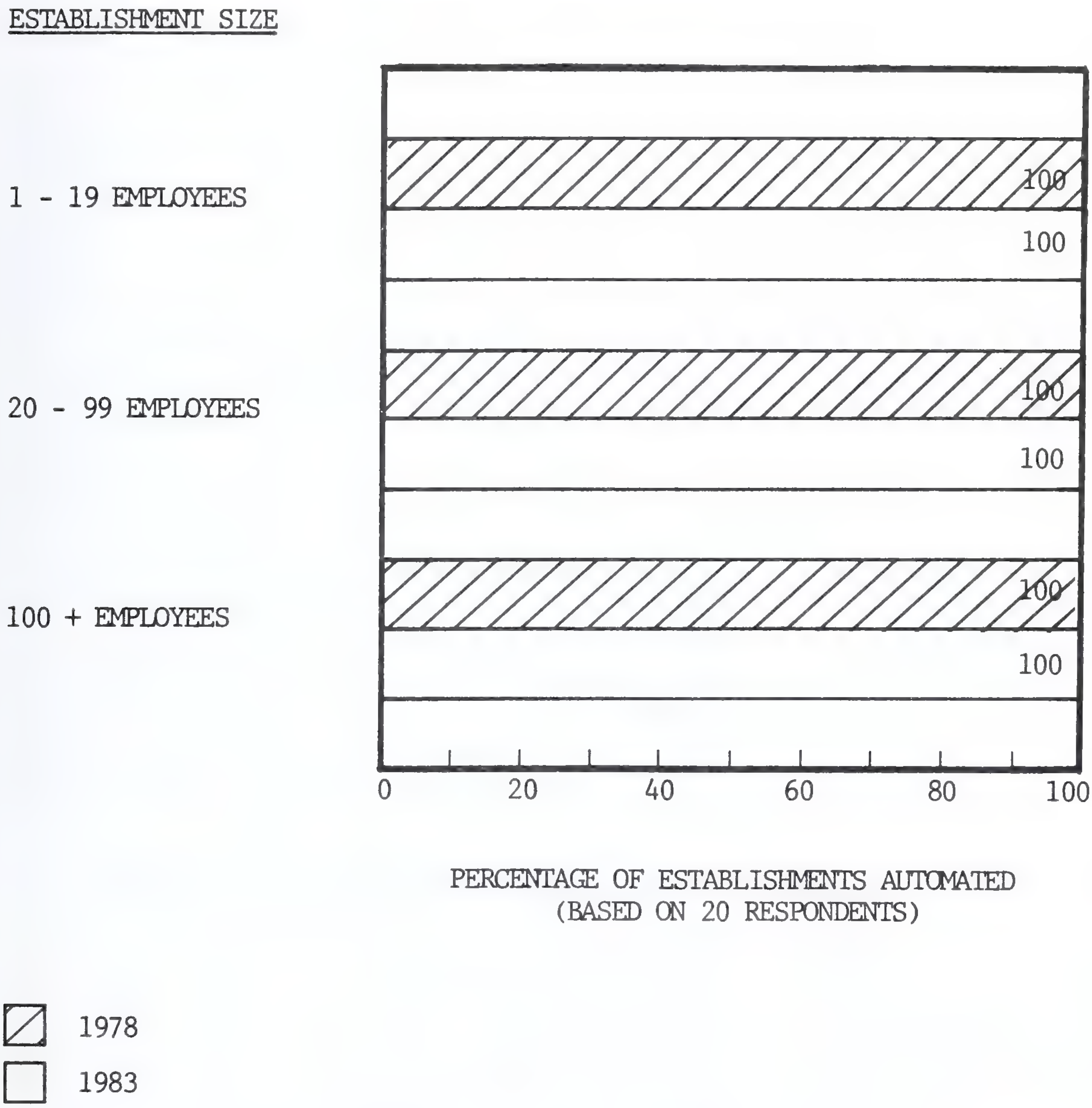


EXHIBIT V-77

ELECTRIC, GAS, AND SANITARY SERVICES:
USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978/1983
(BY SIZE OF ESTABLISHMENT)

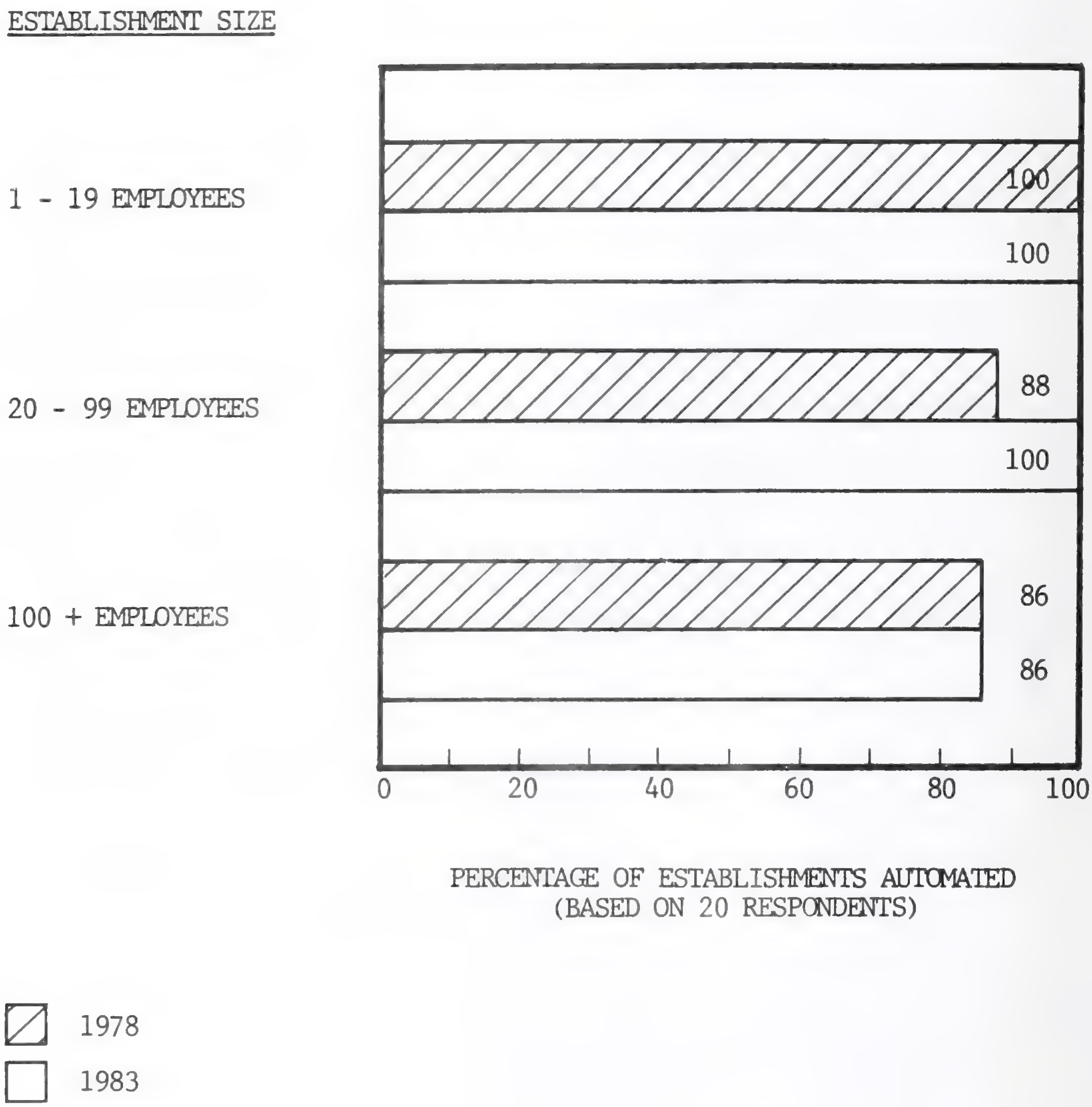


EXHIBIT V-78

ELECTRIC, GAS, AND SANITARY SERVICES: ADMINISTRATIVE/SALES APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=20)			BRANCHES		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-
FINANCE & ACCOUNTING						
Payroll	35%	65%	30%	N A	N A	N A
Billing	-	100	-	-	-	-
Accounts Receivable	35	65	30	-	-	-
Accounts Payable	35	65	30	-	-	-
General Ledger	45	65	35	-	-	-
Other Finance	-	15	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

N/A = NOT APPLICABLE

EXHIBIT V-79

ELECTRIC, GAS, AND SANITARY SERVICES:
ADMINISTRATIVE/SALES APPLICATION ANALYSIS - INDEPENDENTS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=5)			20 - 99 EMPLOYEES (N=8)			100+ EMPLOYEES (N=7)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	60%	40%	40%	25%	75%	25%	28%	72%	28%
Billing	-	100	-	-	100	-	-	100	-
Accounts Receivable	40	60	20	38	62	38	28	72	28
Accounts Payable	40	60	20	38	62	38	28	72	28
General Ledger	40	60	20	38	62	38	28	72	28
Other Finance	-	40	-	-	12	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

N/A = NOT APPLICABLE

EXHIBIT V-80

ELECTRIC, GAS, AND SANITARY SERVICES:

INDUSTRY SPECIFIC APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=20)			BRANCHES		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Customer Records	10%	75%	5%	N/A	N/A	N/A
Revenue Accounting	35	50	30	-	-	-
Material Management	35	45	20	-	-	-
Other (Engineering, Meter Reading)	-	30	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

N/A = NOT APPLICABLE

EXHIBIT V-81

ELECTRIC, GAS, AND SANITARY SERVICES:

INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=5)			20 - 99 EMPLOYEES (N=8)			100+ EMPLOYEES (N=7)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Customer Records	20%	80%	-	12%	62%	12%	-	86%	-
Revenue Accounting	60	40	40	25	62	25	28	42	28
Material (Management)	80	20	20	25	50	25	14	57	14
Other (Engineering, Meter Reading)	-	-	-	-	62	-	-	14	-

*On each question there was a varying percentage of "No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-82

ELECTRIC, GAS, AND SANITARY SERVICES:
EDP, OFFICE, AND COMMUNICATION NEEDS
(BY SIZE OF ESTABLISHMENT)

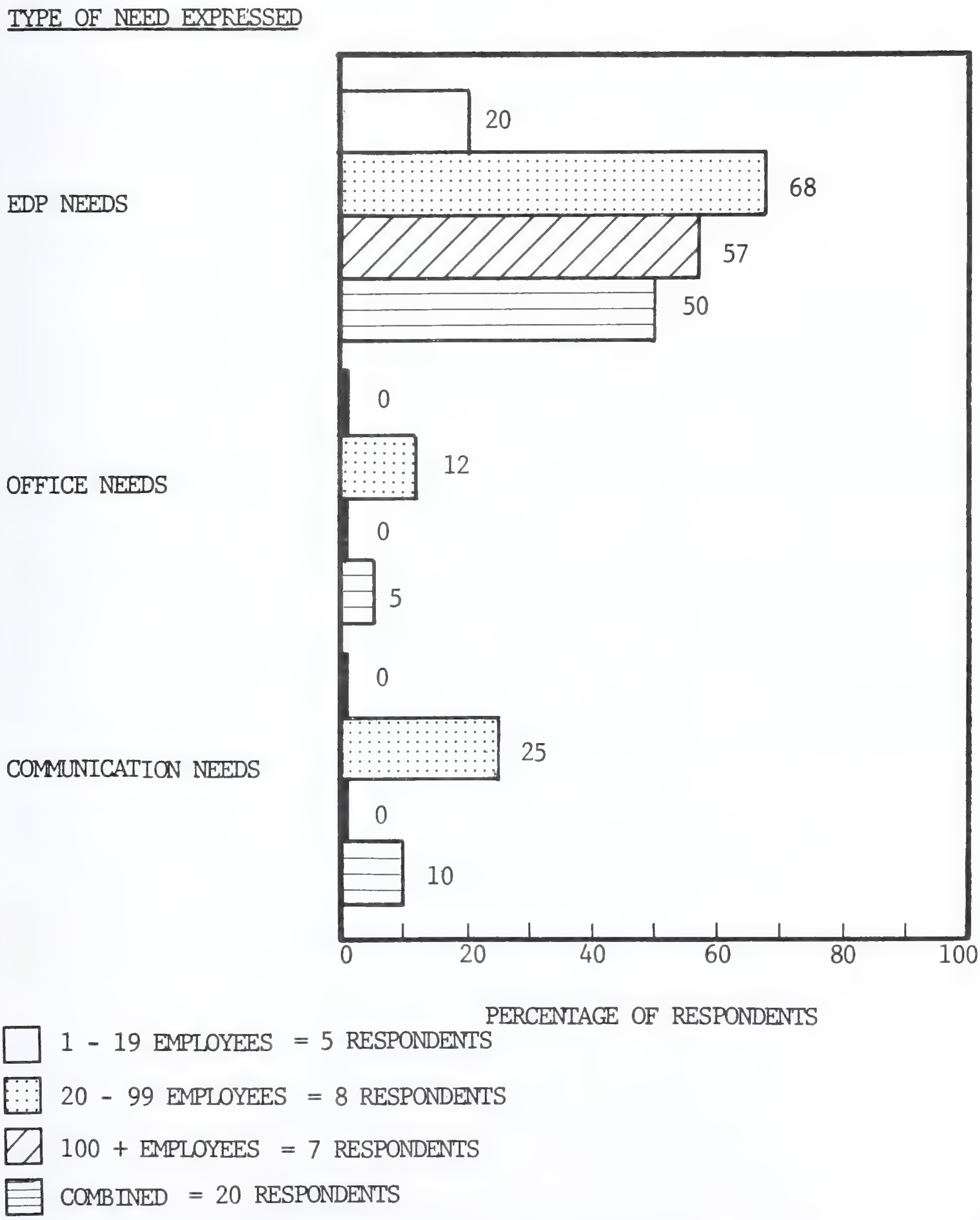


EXHIBIT V-83

TOTAL CURRENT EXPENDITURES

OF THE UTILITIES SECTOR

EXPENDITURE CLASSIFICATION	1 - 19 EMPLOYEES	20 - 99 EMPLOYEES	100 - 499 EMPLOYEES	TOTAL
EDP EQUIPMENT SERVICES, AND SUPPLIES	$20.7M	$91.4M	$143.9M	$256M
OFFICE EQUIPMENT	$22.5M	$78.8M	$123.7M	$225M
COMMUNICATIONS EQUIPMENT AND SERVICES	$59.2M	$207.2M	$325.6M	$592M
TOTAL	$102.4M	$377.4M	$593.2M	$1,073M

EXHIBIT V-84

AVERAGE CURRENT EXPENDITURES OF THE UTILITIES SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$250	1.1%
OFFICE EQUIPMENT	220	1.0
COMMUNICATIONS EQUIPMENT & SERVICES	579	2.6

F. WHOLESALE

F. WHOLESALE

I. INDUSTRY CHARACTERISTICS

- The merchant wholesale sector is overwhelmingly characterized by small establishments, many of which currently use and desire more automated equipment and services. Penetration of both computer equipment and outside computer services, as well as the use of word processing equipment, is variable but above the average for all small establishments. Further needs for computer equipment or services have been expressed by almost three-quarters of all respondents, and the larger firms also expressed office and communications needs.

- The merchant wholesale sector is comprised almost entirely of small establishments (see Exhibit V-85). Over 250,000 establishments, 99.9 percent of all establishments in the wholesale sector, have less than 500 employees. Ninety-nine percent have fewer than 100 employees. Small establishments in the wholesale sector have 3.7 million employees. The industries contained in the wholesale sector are:

  - Durable goods wholesale (SIC 50).

  - Non-durable goods wholesale (SIC 51).

- Small establishments of the entire wholesale sector spend \$2.1 billion annually on equipment and services, including:

  - EDP equipment.

  - EDP services.

  - Office equipment.

- Communications equipment.

- Communications services.

- Supplies.

• The industry subsector which is the focus of this section is the durable goods wholesale industry (SIC 50). The durable goods wholesale industry follows the general trends found in the wholesale sector.

• There are no regional concentrations in the durable goods wholesale industry, as shown in Exhibit V-86. This pattern is similar to the entire wholesale sector.

• The durable goods wholesale industry contains over 140,000 single unit establishments with sales over one hundred billion dollars, or 33 percent of total industry sales. One hundred and ten enterprises with over 13,000 establishments collectively have sales over one hundred billion dollars, or 32 percent of total industry sales.

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

• Most branch establishments have EDP equipment installed, but the level is somewhat lower among independents. No independent establishments with fewer than 20 employees would consent to be interviewed, but INPUT believes the penetration of EDP equipment in this size class is low (see Exhibit V-87).

• Approximately one-third of all independent respondents and approximately one-sixth of all branch respondents used computer services (see Exhibits V-88 and V-89).

  - No respondents from branch establishments with fewer than 20 employees stated that they would use computer services, nor would any independent establishments with more than 100 employees. A common

reason among respondents for not using computer services was a desire to use their own equipment.

- The 25 percent of larger independent respondents who are presently using computer services expect to discontinue using services and obtain their own equipment instead. Therefore, they show up as zero under the "Would Use" category.

- EDP penetration in the durable goods wholesale industry is nearly 100 percent for medium-sized establishments (see Exhibit V-90), but is undetermined for smaller independents. INPUT believes overall penetration to be average or low.

- There is fair acceptance of automated office equipment in the durable goods wholesale industry among the larger sized independents. Smaller establishments have not heard of word processing yet (see Exhibit V-91).

- Seventy-three percent of all respondents used on-premises switching communication equipment (keyset or PABX - see Exhibit V-92), mainly supplied by the local telephone company.

- There are wide disparities in usage of Telex/TWX communications services between branches and independents (see Exhibit V-93). Fifty-three percent of branch locations used TWX or Telex, but only 14 percent of respondents from independent establishments had TWX or Telex installed. Use of other communications services is similar between branches and independents.

- Overall, about 10 percent of all respondents used interconnect communications equipment. Independent enterprises with more than 100 employees and branch locations with fewer than 100 employees are the main interconnect users (see Exhibit V-94).

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-95, V-96, and V-97 show that respondents use EDP about equally for all functions:

  - Half to three-fourths of all current applications are automated in the administrative, sales/marketing, and industry specific functional areas.

- About 60-75 percent of durable goods wholesale establishments use EDP for administrative applications (see Exhibit V-98):

  - Larger establishments are only slightly more automated than small establishments, contrary to the usual pattern (see Exhibits V-99 and V-100).

  - A 10 to 20 percent increase in automation of administrative applications is expected within the next five years.

- Sales and marketing applications are one-third to two-thirds automated now, with the medium size establishments planning to catch up to the higher figure over the next five years.

- Industry specific applications in wholesale primarily involve inventory control, order allocation, and shipping (see Exhibit V-101).

- Again, the medium sized establishments lag behind both smaller and larger establishments, but plan to catch up over the next five years (see Exhibits V-102 and V-103).

- In the larger size class, independents lead branches two to one in the percentage of industry specific applications automated now.

4. EDP, OFFICE AND COMMUNICATION NEEDS

- In the durable goods wholesale industry, almost three-fourths of all respondent establishments stated further needs for computer equipment and services, but lower levels of need for office and communication improvements (see Exhibit V-104):

  - Seventy-three percent of respondents expressed EDP needs.

  - Ten percent of respondents expressed office needs.

  - Seventeen percent of respondents expressed further communications needs.

- EDP needs were expressed equally by all sizes of establishment. Many needs relate to improved inventory control capabilities and increased capacity to handle increased workloads and changes in customer ordering patterns. Some respondent comments are:

  - "Outgrowing current system and looking for a larger system."

  - "Would like to see a system that would not lose control of inventory for the first year of operation."

  - "Faster order entry."

  - "Direct access to corporate machine."

- "Need new equipment. Equipment is from the dark ages."

- Office needs were expressed by 10 percent of all establishments, but mainly came from establishments with more than 100 employees. A frequently expressed need is for inexpensive equipment to handle billing.

- Communications needs were expressed equally by all sizes of establishments. Types of improvements desired were not made explicit.

5. EXPENDITURES

- Expenditures for EDP, office and communications equipment and services exceed $2.1 billion annually in the wholesale sector, as seen in Exhibits V-105 and V-106. Over three-fourths of all expenditures for automated equipment, services, and supplies are spent by establishments with less than 100 employees.

- This level of expenditure is midway between highest and lowest for all the industry sectors covered by this report, but the rate of expenditure ranks eleventh out of twelve:

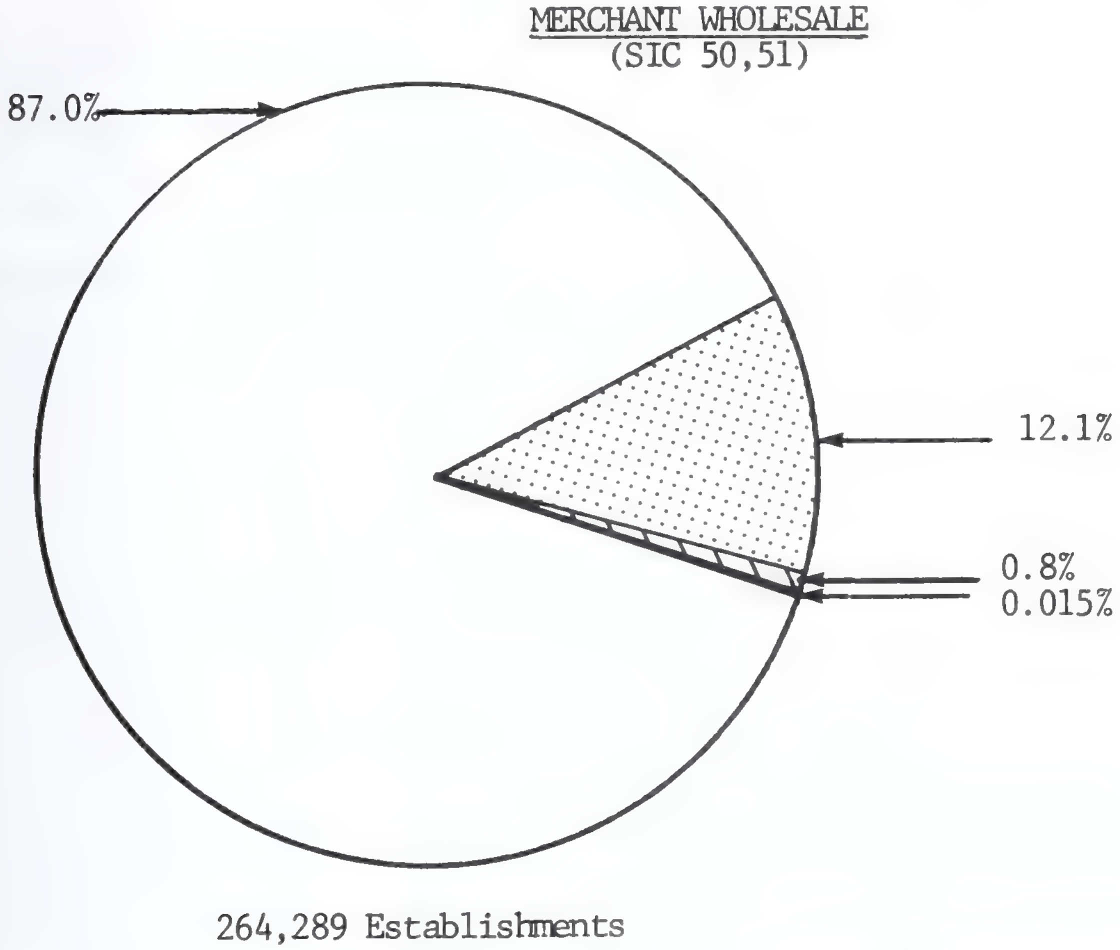
  - Annual expenditures for EDP equipment, services and supplies are $513 million or $134 per employee. Expenditures for EDP equipment, services, and supplies equal 0.2 percent of gross sales in the wholesale sector.

  - Annual expenditures for office equipment are $450 million or $117 per employee. Expenditures for office equipment equal 0.1 percent of gross sales in the wholesale sector.

  - Annual expenditures for communications equipment and services are $1.1 billion or $309 per employee. Expenditures for communications equipment and services in the wholesale sector equal 0.4 percent of gross sales.

EXHIBIT V-85

STRUCTURE OF MERCHANT WHOLESALE & DURABLE GOODS WHOLESALE INDUSTRIES (BY SIZE OF ESTABLISHMENT, 1975)



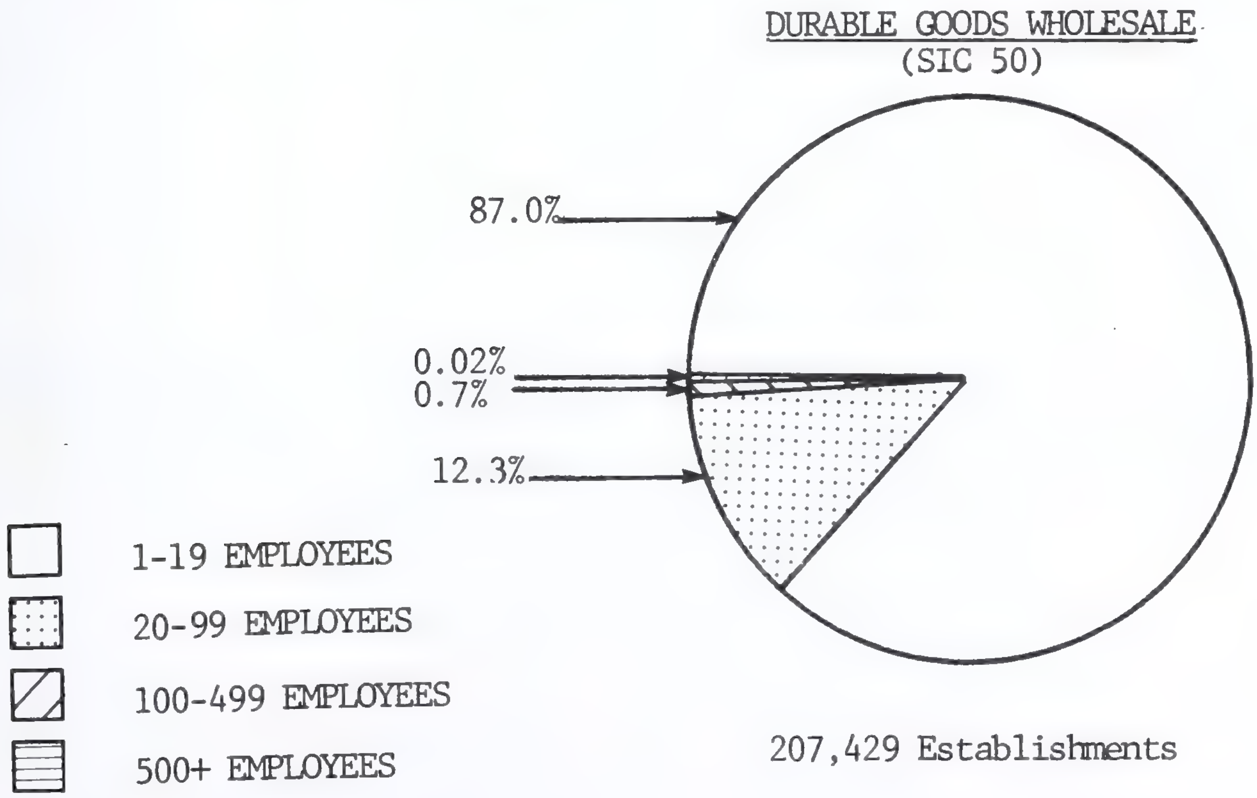


EXHIBIT V-86

DISTRIBUTION OF WHOLESALE TRADE - DURABLE GOODS

ESTABLISHMENTS (BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	3088	1.5%	MT	781	0.4%
AK	313	0.2	NE	1777	0.9
AZ	1873	0.9	NV	490	0.2
AR	1746	0.8	NH	645	0.3
CA	19,239	9.3	NJ	7071	3.4
CO	2847	1.4	NM	993	0.5
CT	2825	1.4	NY	18,859	9.1
DE	711	0.3	NC	4807	2.3
DC	374	0.2	ND	817	0.4
FL	8086	3.9	OH	10,201	4.9
GA	5266	2.5	OK	2776	1.3
HI	702	0.3	OR	2564	1.2
ID	833	0.4	PA	10,506	5.1
IL	11,160	5.4	RI	868	0.4
IN	4648	2.2	SC	2051	1.0
IA	7538	3.6	SD	724	0.3
KS	2524	1.2	TN	3952	1.9
KY	2497	1.2	TX	13,275	6.4
LA	3632	1.8	UT	1273	0.6
ME	766	0.4	VT	400	0.2
MD	2914	1.4	VA	3386	1.6
MA	5268	2.5	WA	1608	0.8
MI	11,819	5.7	WV	1354	0.7
MN	4211	2.0	WI	4096	2.0
MS	1715	0.8	WY	413	0.2
MO	5106	2.5			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				207,388	100.0%

EXHIBIT V-87

WHOLESALE DURABLE GOODS: EDP EQUIPMENT INSTALLED (BY TYPE AND SIZE OF ESTABLISHMENT)

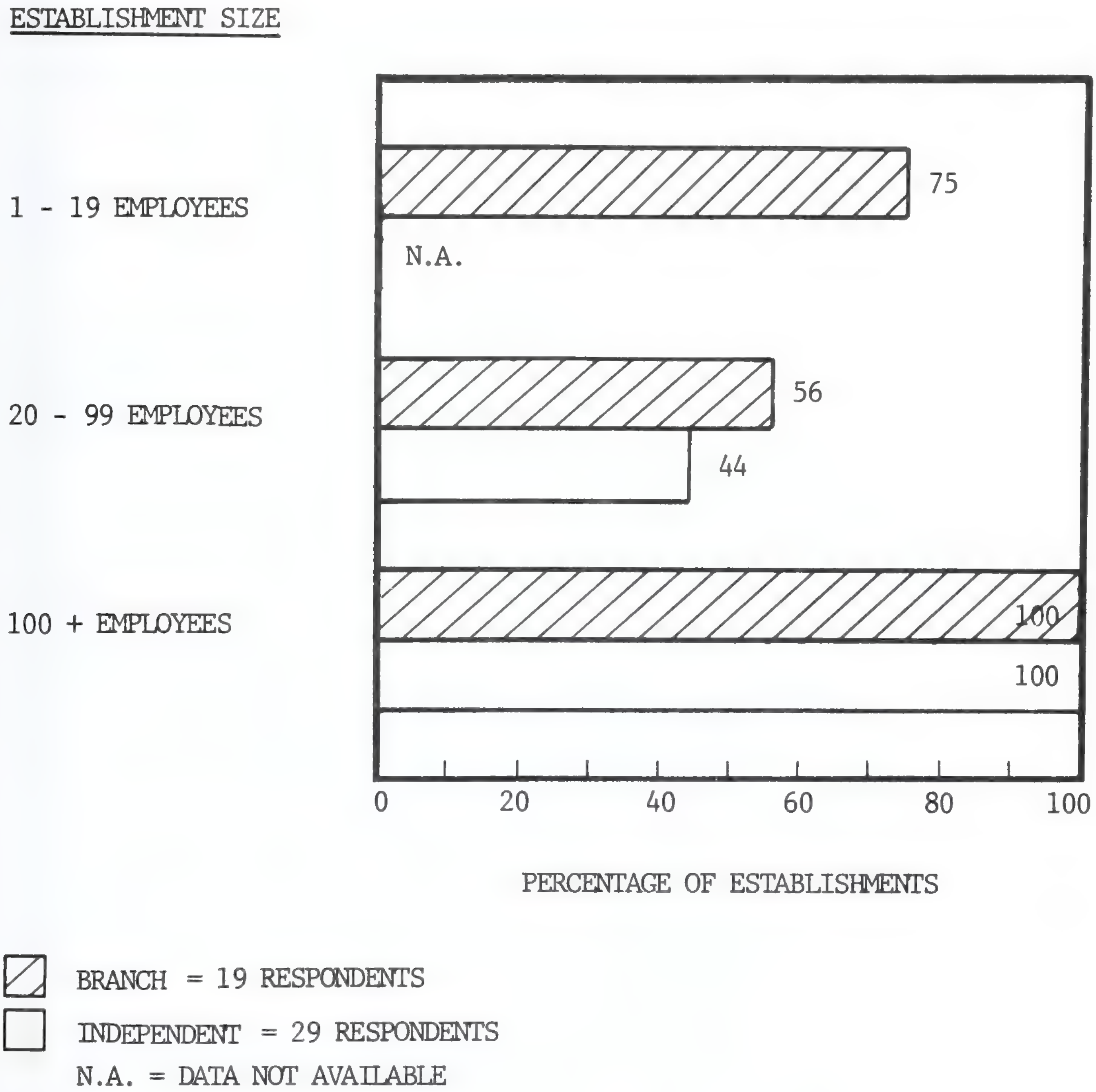


EXHIBIT V-88

WHOLESALE DURABLE GOODS:

USE OF COMPUTER SERVICES - BRANCHES

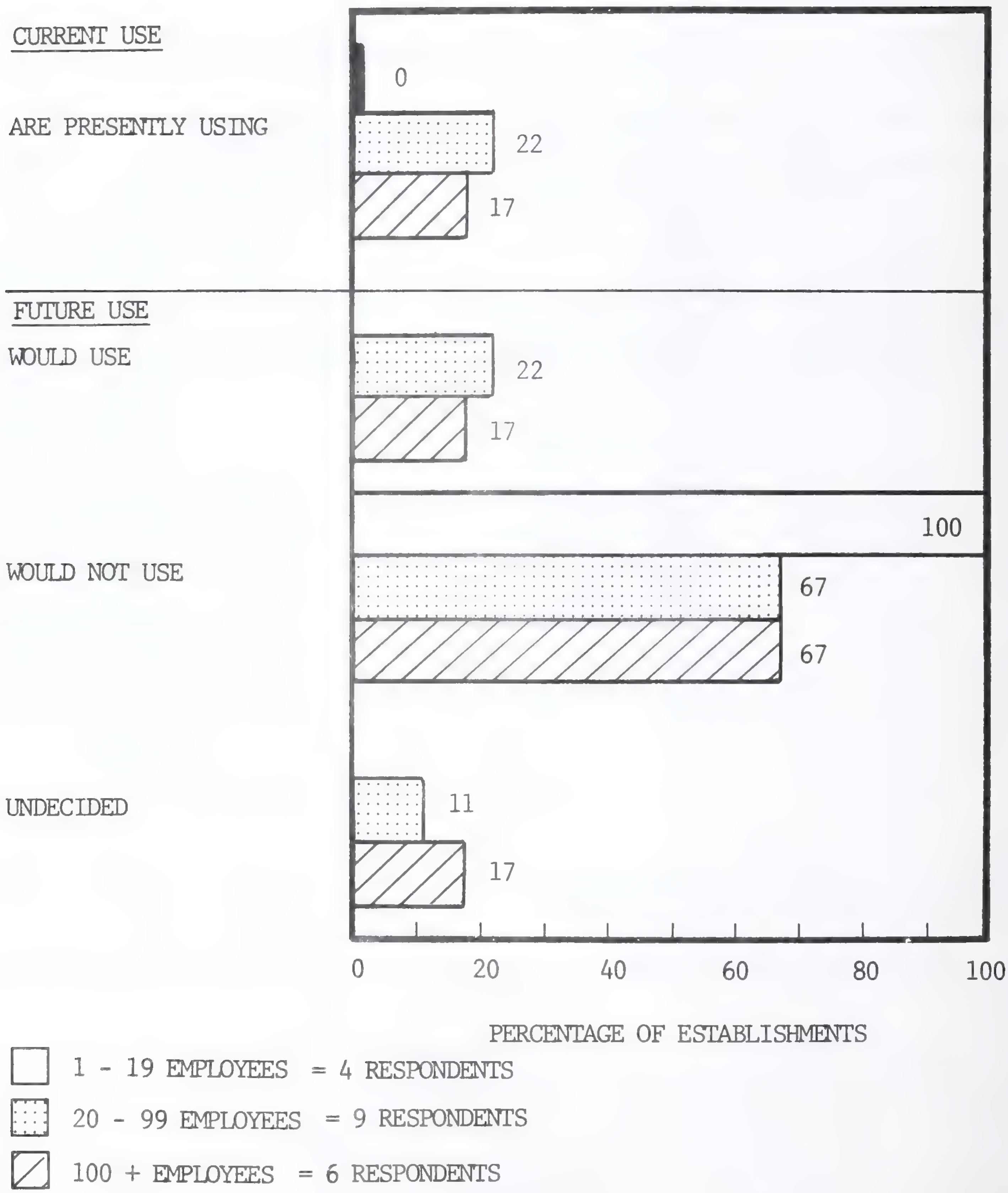


EXHIBIT V-89

WHOLESALE DURABLE GOODS:

USE OF COMPUTER SERVICES - INDEPENDENTS

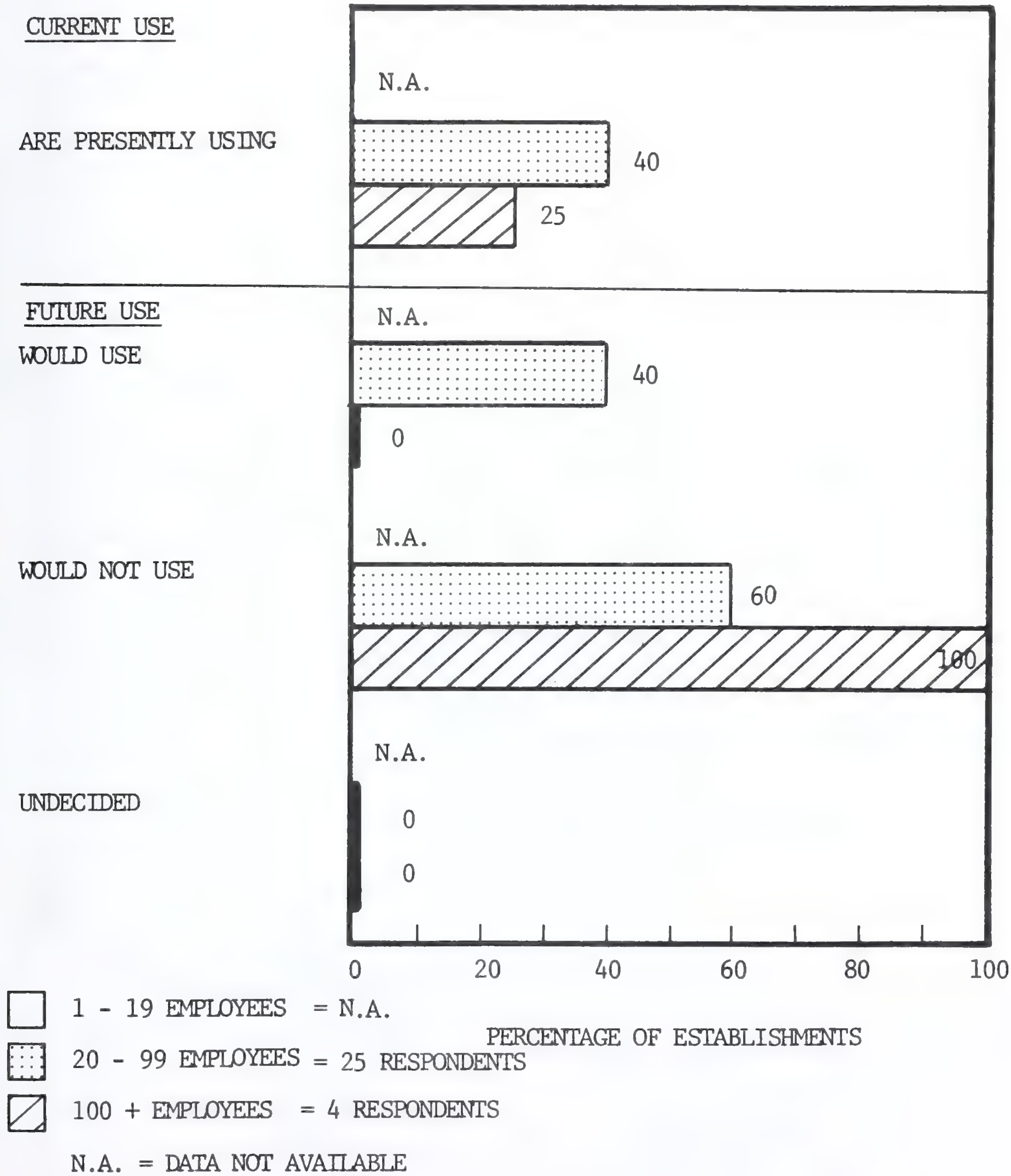


EXHIBIT V-90

WHOLESALE DURABLE GOODS: PERCENTAGE OF USERS OF COMPUTER EQUIPMENT OR SERVICES OR BOTH (BY SIZE OF ESTABLISHMENT)

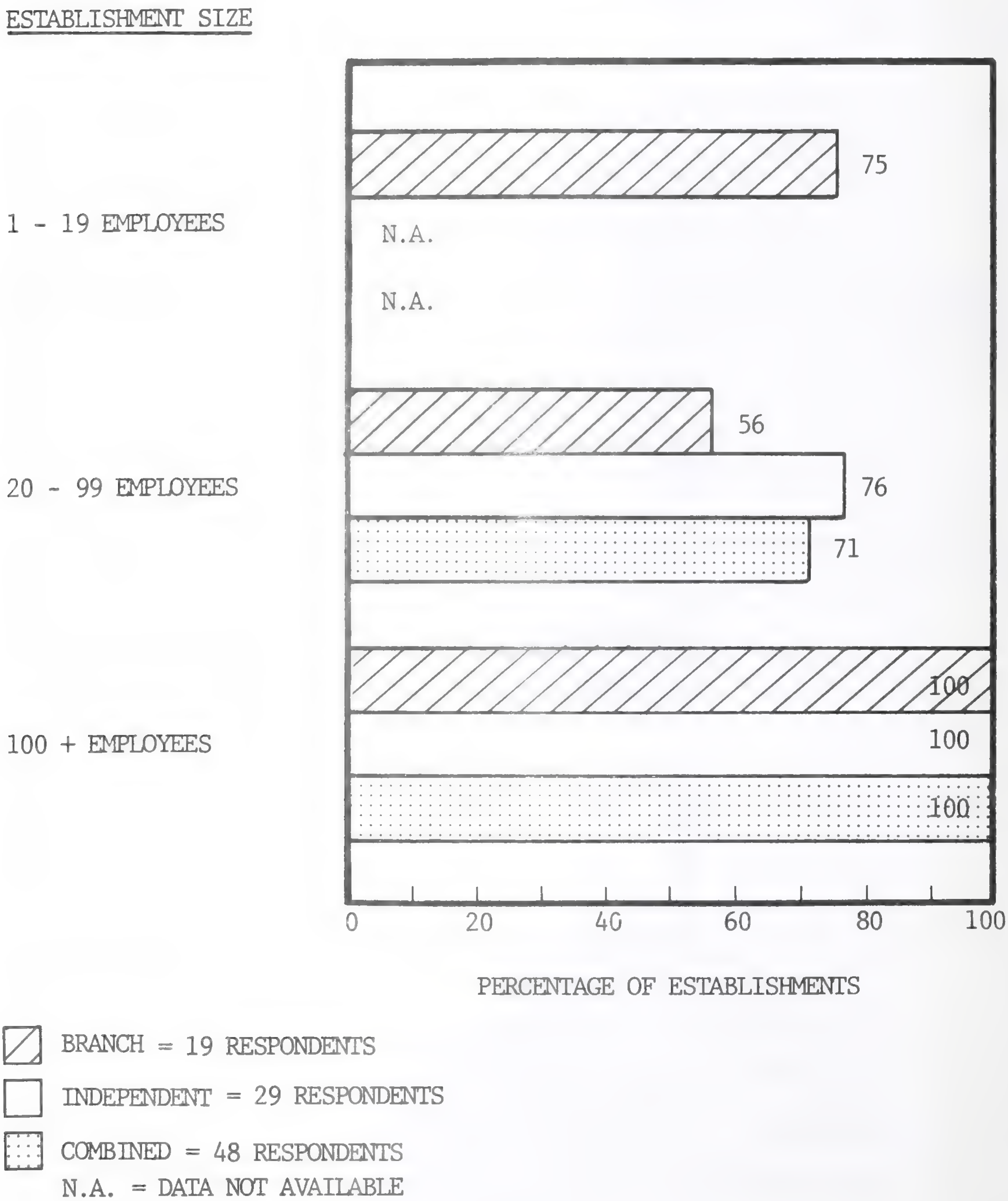


EXHIBIT V-91

WHOLESALE DURABLE GOODS:

PENETRATION OF OFFICE AUTOMATION (BY SIZE OF ESTABLISHMENT)

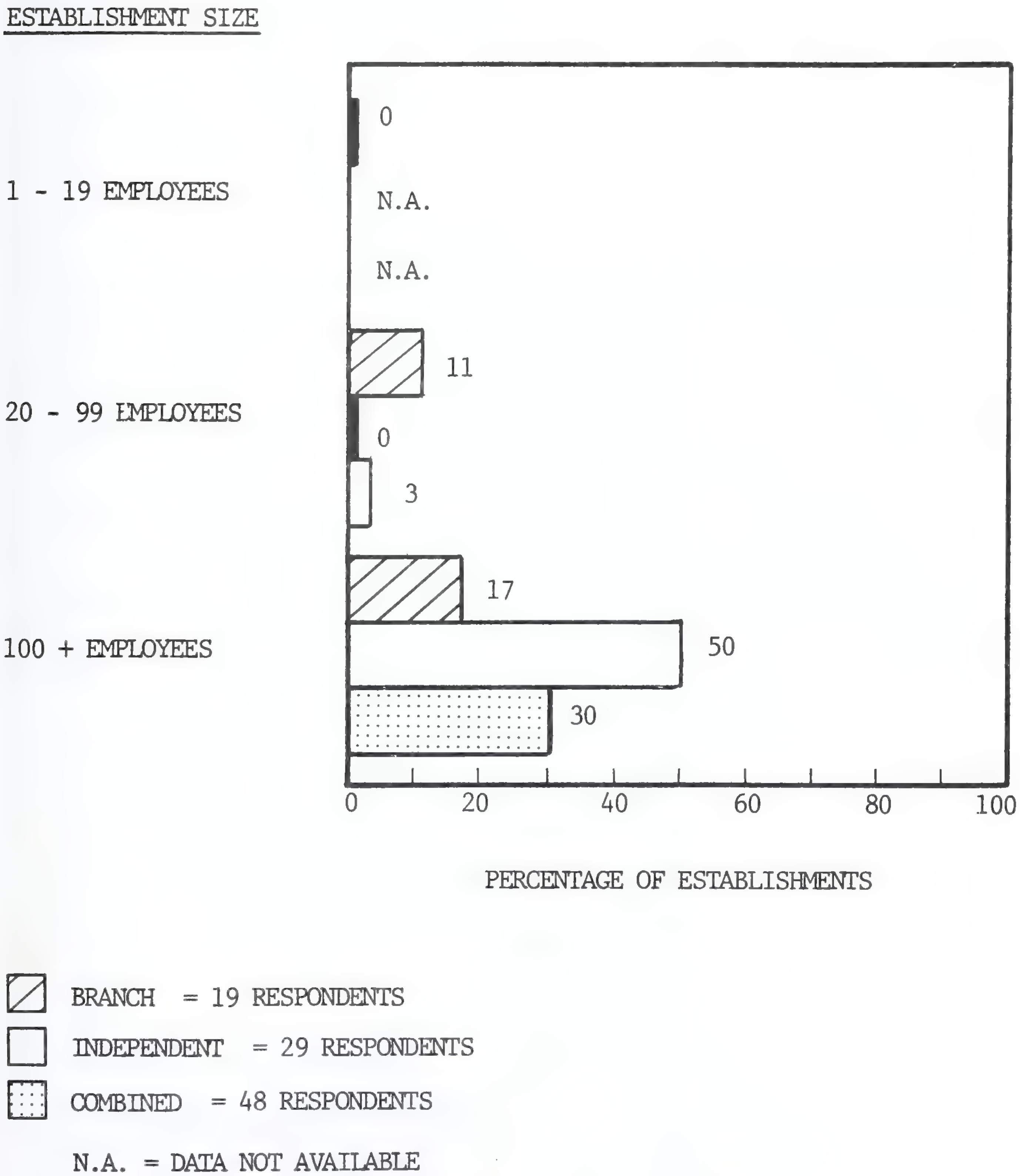


EXHIBIT V-92

WHOLESALE DURABLE GOODS:
COMMUNICATIONS EQUIPMENT INSTALLED - BRANCHES AND INDEPENDENTS

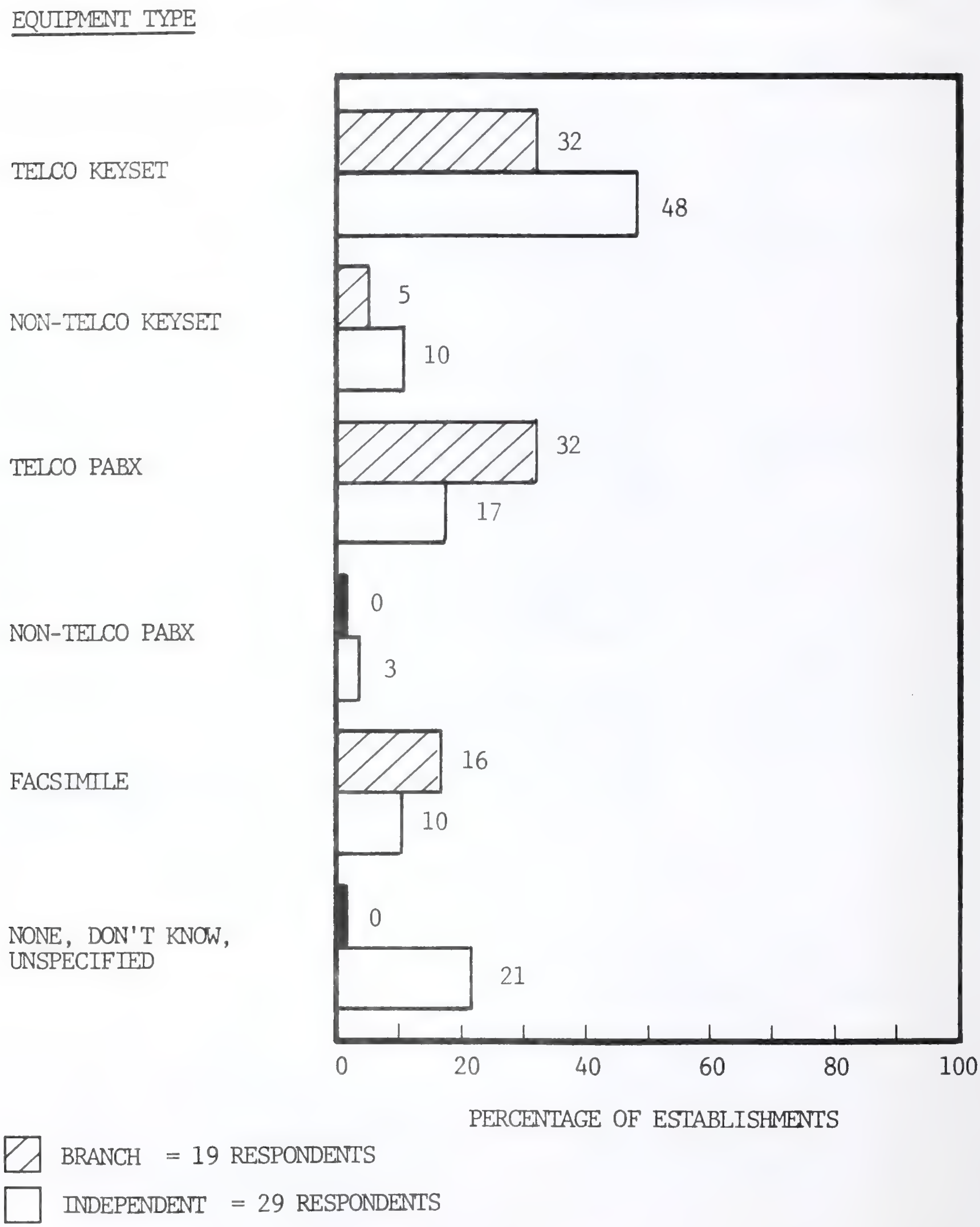


EXHIBIT V-93

WHOLESALE DURABLE GOODS:

COMMUNICATIONS SERVICES INSTALLED - BRANCHES AND INDEPENDENTS

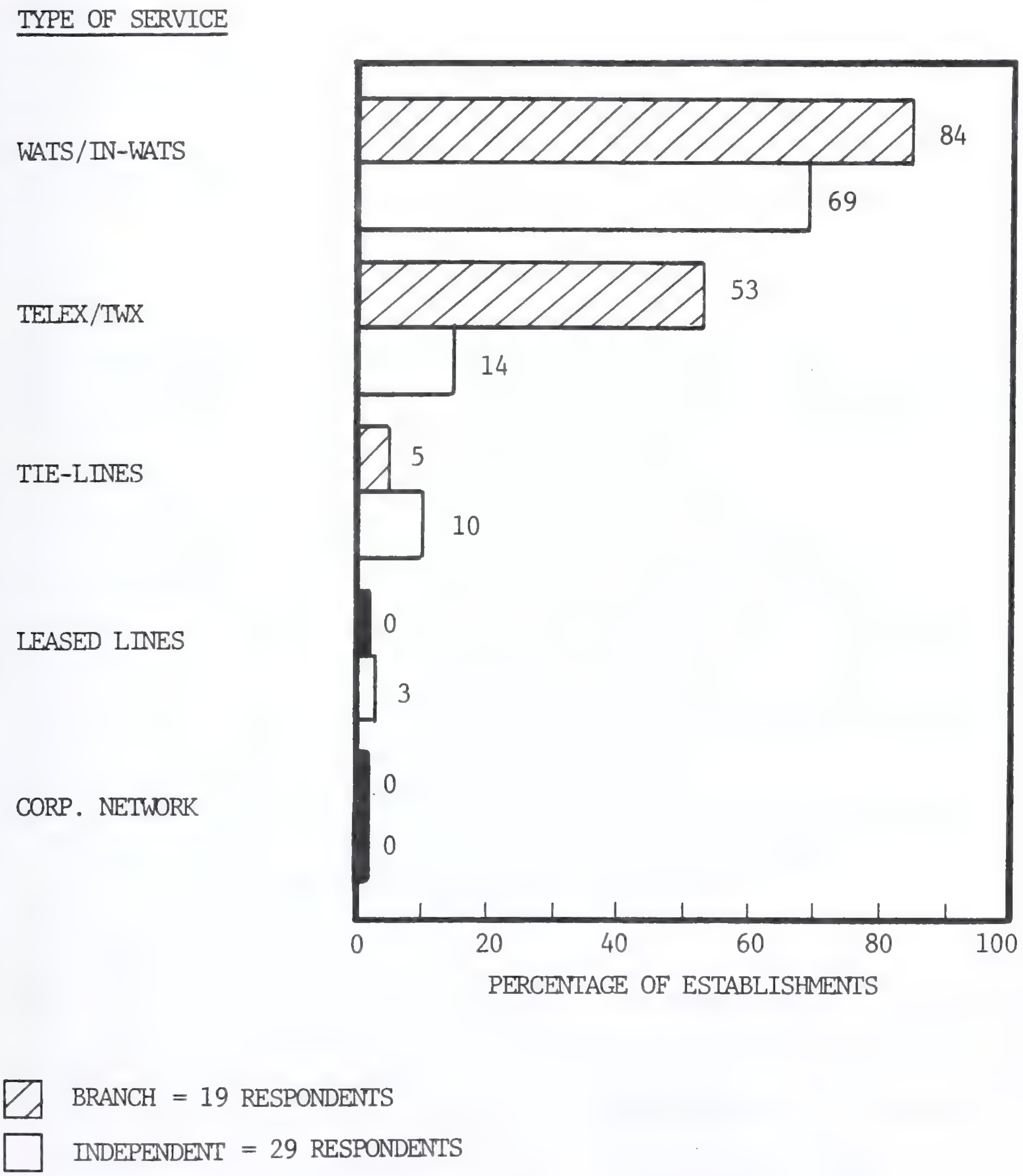


EXHIBIT V-94

WHOLESALE DURABLE GOODS:
USERS OF NON-TELCO COMMUNICATIONS EQUIPMENT/SERVICES
(BY SIZE OF ESTABLISHMENT)

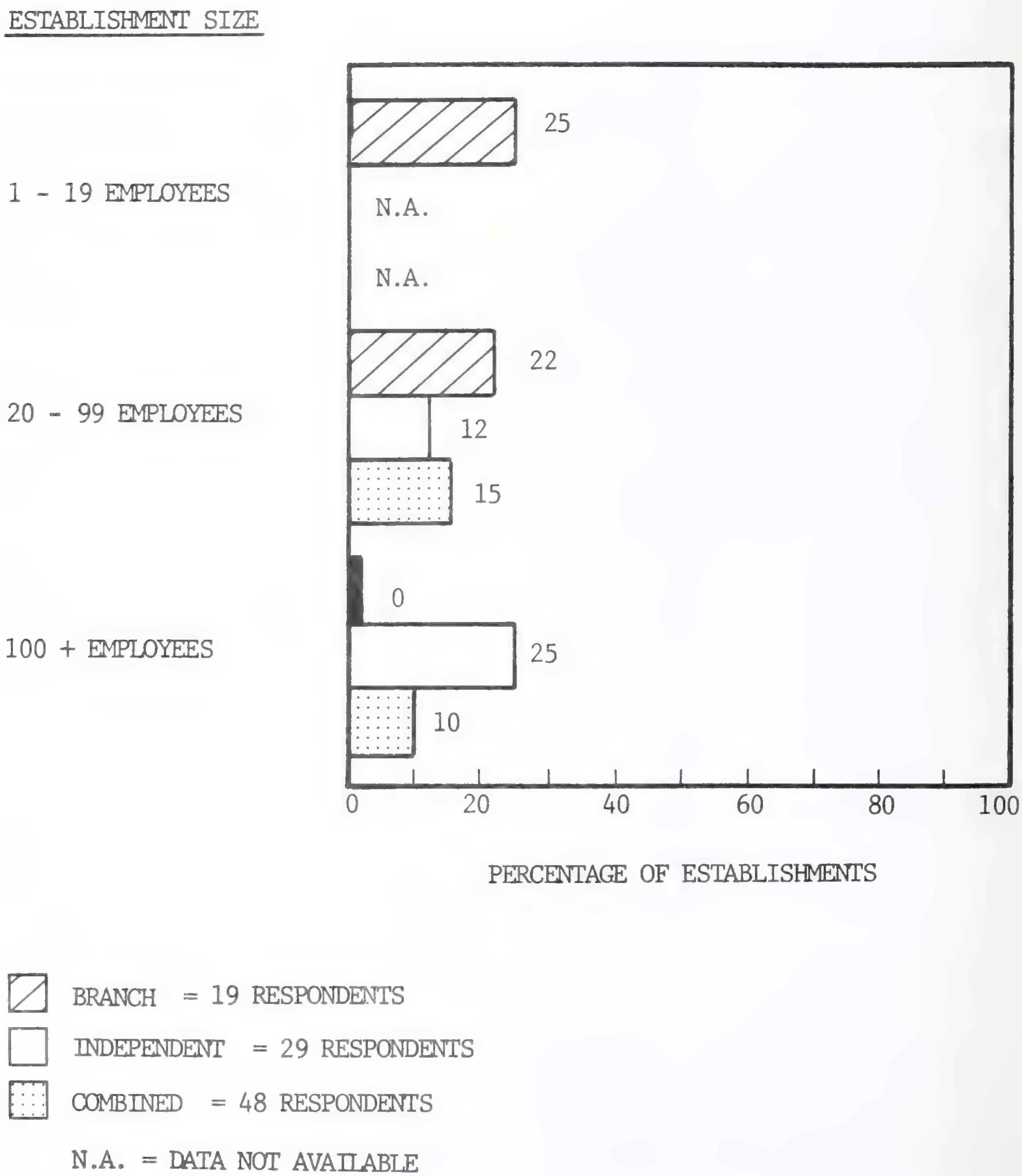


EXHIBIT V-95

WHOLESALE DURABLE GOODS:
USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978/1983
(BY SIZE OF ESTABLISHMENT)

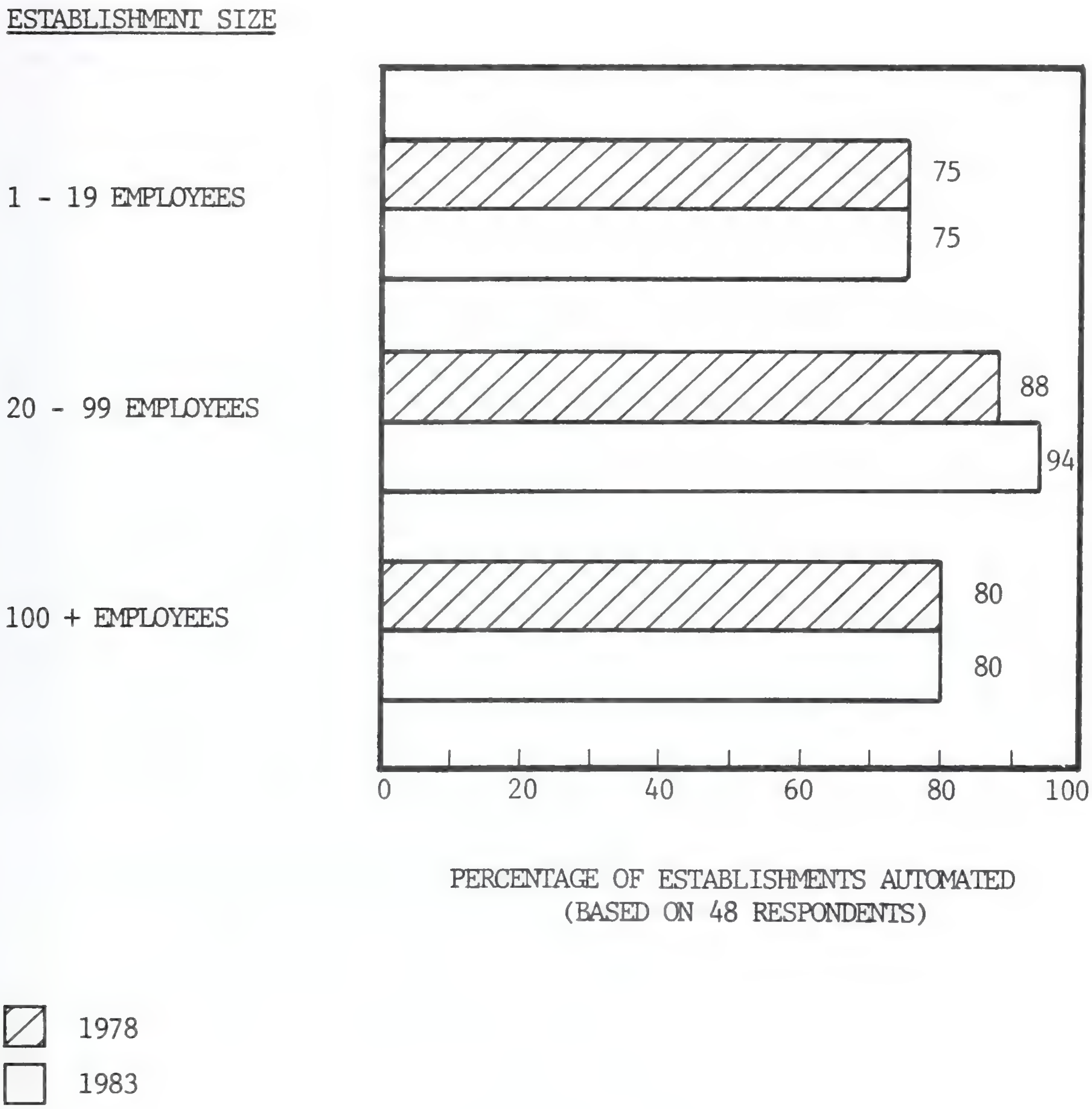


EXHIBIT V-96

WHOLESALE DURABLE GOODS:
USE OF EDP FOR SALES/MARKETING FUNCTIONS 1978/1983
(BY SIZE OF ESTABLISHMENT)

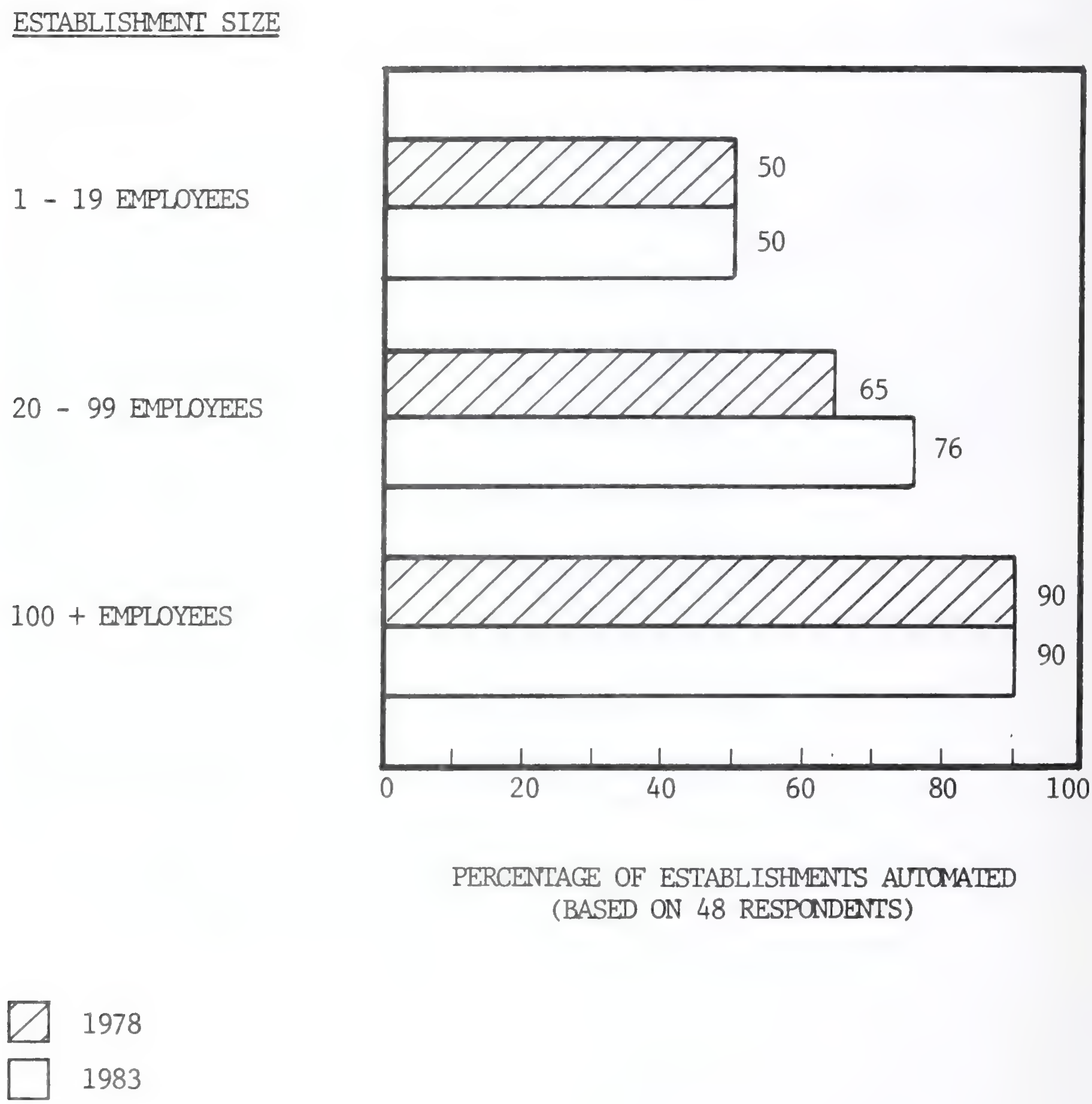


EXHIBIT V-97

WHOLESALE DURABLE GOODS:
USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978/1983
(BY SIZE OF ESTABLISHMENT)

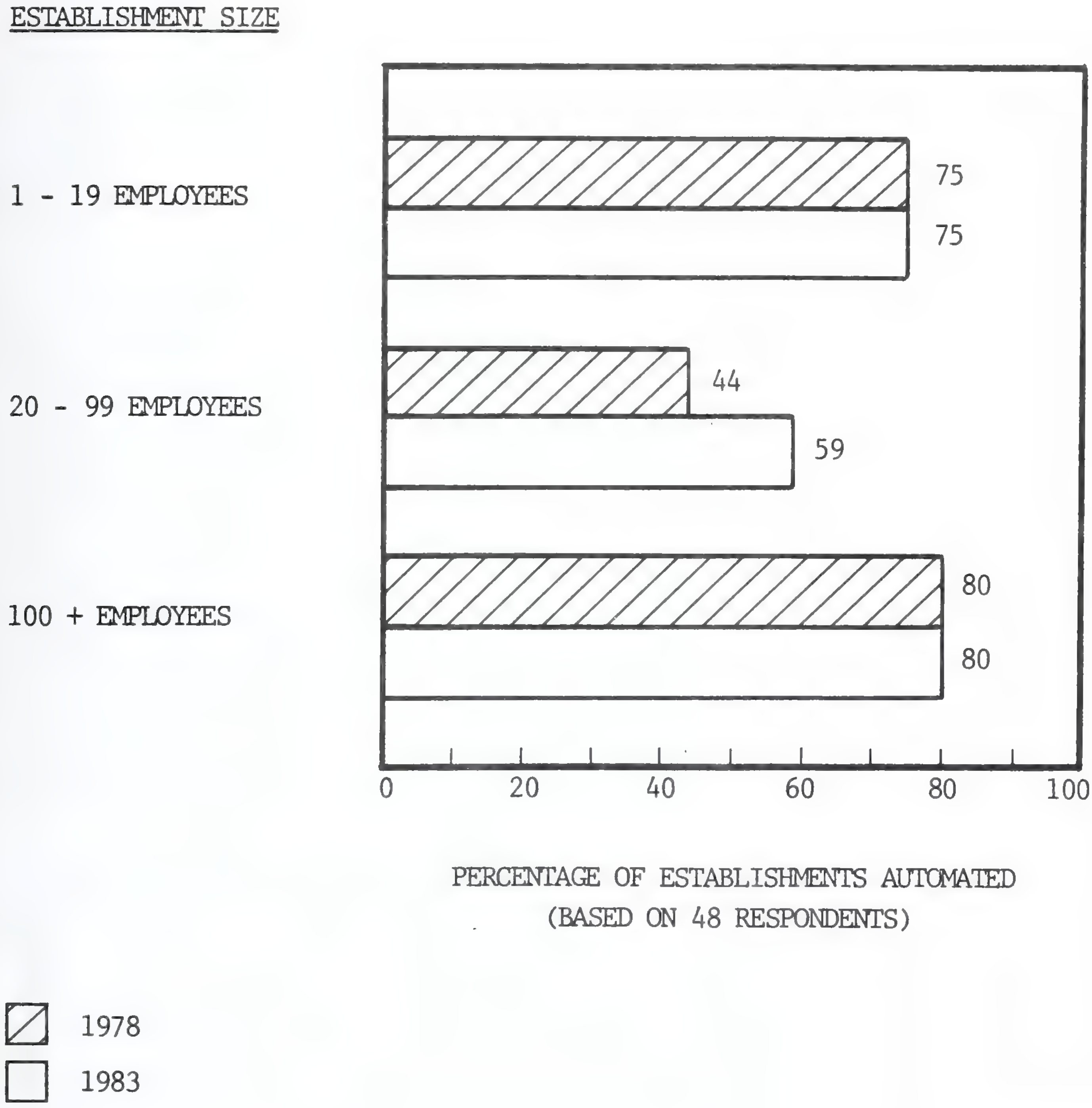


EXHIBIT V-98

WHOLESALE DURABLE GOODS:
ADMINISTRATIVE/SALES APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=29)			BRANCHES (N=19)		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	59%	38%	17%	26%	32%	16%
Sales Analysis	31	69	10	21	58	11
Credit Authorization	41	28	14	16	42	16
Other Marketing	-	-	-	-	-	-
FINANCE & ACCOUNTING						
Payroll	10	90	7	26	53	11
Billing	31	69	10	16	53	5
Accounts Receivable	24	76	10	16	58	5
Accounts Payable	34	66	14	16	63	5
General Ledger	38	55	14	5	53	5
Other Finance	3	-	3	5	5	

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-99

WHOLESALE DURABLE GOODS:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS - BRANCHES

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=4)			20 - 99 EMPLOYEES (N=9)			100+ EMPLOYEES (N=6)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	25%	50%	-	44%	33%	33%	-	67%	-
Sales Analysis	25	50	-	33	56	22	-	67	-
Credit Authorization	-	50	-	33	33	33	-	50	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	-	75	-	44	44	22	17	50	-
Billing	-	50	-	22	67	11	17	33	-
Accounts Receivable	-	50	-	22	67	11	17	50	-
Accounts Payable	-	50	-	22	78	11	17	50	-
General Ledger	-	50	-	11	67	11	-	33	-
Other Finance	-	-	-	11	11	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-100

WHOLESALE DURABLE GOODS:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS - INDEPENDENTS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES			20 - 99 EMPLOYEES (N=25)			100+ EMPLOYEES (N=4)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N.A.	N.A.	N.A.	68%	32%	20%	-	100%	-
Sales Analysis	-	-	-	36	64	12	-	100	-
Credit					6				
Authorization	-	-	-	48	16	16	-	100	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	N.A.	N.A.	N.A.	12	88	8	-	100	-
Billing	-	-	-	36	64	12	-	100	-
Accounts Receivable	-	-	-	28	72	12	-	100	-
Accounts Payable	-	-	-	36	64	12	25	75	25
General Ledger	-	-	-	40	52	12	25	75	25
Other Finance	-	-	-	4	-	4	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

N.A. = DATA NOT AVAILABLE

EXHIBIT V-101

WHOLESALE DURABLE GOODS:

INDUSTRY SPECIFIC APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=29)			BRANCHES (N=19)		
	Manual	Automated Now	Automated In5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Order Allocation	59%	38%	17%	26%	47%	16%
Shipping	59	41	17	32	42	16
Stock Replenishment	59	38	17	26	26	16
Other Warehousing	-	-	-	-	5	-
Inventory Control	52	48	14	26	47	11
Receiving	62	38	14	32	37	11

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-102

WHOLESALE DURABLE GOODS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - BRANCHES

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=4)			20 - 99 EMPLOYEES (N=9)			100+ EMPLOYEES (N=6)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Order Allocation	25%	75%	-	44%	33%	33%	-	50%	-
Shipping	25	50	-	56	33	33	-	50	-
Stock Replenishment	25	25	-	44	22	33	-	33	-
Other Warehousing	-	-	-	-	11	-	-	-	-
Inventory Control	25	75	-	33	44	22	17	33	-
Receiving	25	75	-	44	33	22	17	17	-

*On each question there was a varying percentage of 'No Responses.' Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-103

WHOLESALE DURABLE GOODS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES			20 - 99 EMPLOYEES (N=25)			100+ EMPLOYEES (N=4)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Order Allocation	N.A.	N.A.	N.A.	68%	28%	20%	-	100%	-
Shipping	-	-	-	68	32	20	-	100	-
Stock Replenishment	-	-	-	68	32	20	-	100	-
Other Warehousing	-	-	-	-	-	-	-	-	-
Inventory Control	-	-	-	60	40	16	-	100	-
Receiving	-	-	-	72	28	16	-	100	-

*On each question there was a varying percentage of "No Responses."
Therefore the sum of manual plus automated now may not equal 100%.
N.A. = Data Not Available

EXHIBIT V-104

WHOLESALE DURABLE GOODS: EDP, OFFICE, AND COMMUNICATION NEEDS (BY SIZE OF ESTABLISHMENT)

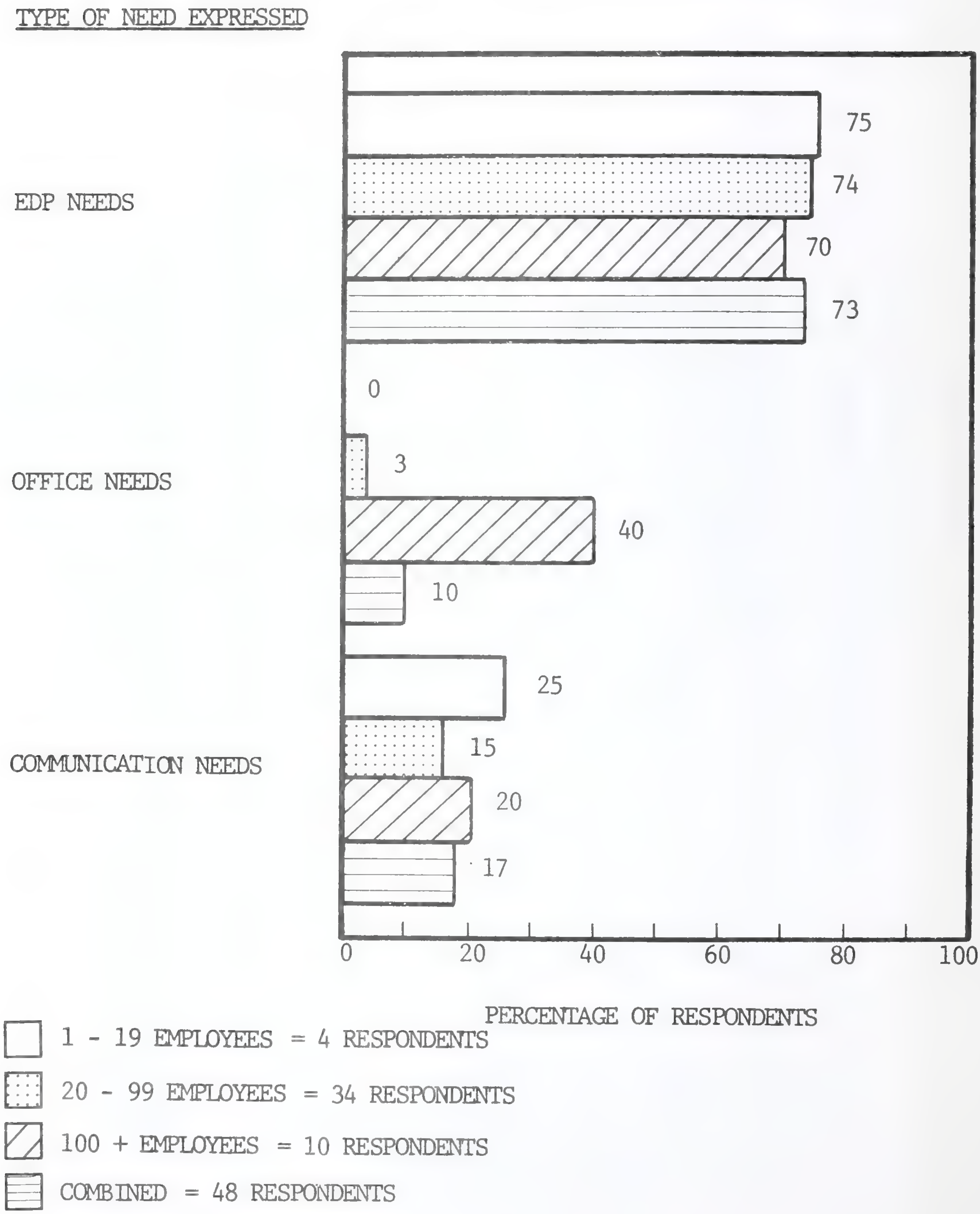


EXHIBIT V-105

TOTAL CURRENT EXPENDITURES
OF THE WHOLESALE SECTOR

EXPENDITURE CLASSIFICATION	1 - 19 EMPLOYEES	20 - 99 EMPLOYEES	100 - 499 EMPLOYEES	TOTAL
EDP EQUIPMENT SERVICES, AND SUPPLIES	$ N.A.	$330.9M	$182.1M	$513M
OFFICE EQUIPMENT	$157.0M	$210.6M	$82.4M	$450M
COMMUNICATIONS EQUIPMENT AND SERVICES	$413.2M	$554.1M	$216.7M	$1,184M
TOTAL	$570.2M	$1,095.6M	$481.2M	$2,147M

N.A. = DATA NOT AVAILABLE

EXHIBIT V-106

AVERAGE CURRENT EXPENDITURES
OF THE MERCHANT WHOLESALE SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$ 134	0.2 %
OFFICE EQUIPMENT	117	0.1
COMMUNICATIONS EQUIPMENT & SERVICES	309	0.4

G. RETAIL

G. RETAIL

1. INDUSTRY CHARACTERISTICS

- The retail industry sector is 99.9 percent characterized by small establishments, most of which do not presently use but desire to use automated equipment and services. Penetration of automated equipment is the lowest for all small establishments of any sector. Further needs for computer equipment and services have been expressed, but little interest was expressed in office and communication automation. Nevertheless, total expenditures by this sector are the second highest of all the sectors, because of the very large number of establishments in the sector.

- The retail sector is comprised almost entirely of small establishments (see Exhibit V-107). Over one million establishments, more than 99 percent of all establishments in the retail sector, have less than 500 employees, and altogether employ 11.5 million people. The industries contained in the retail sector are:

  - Building materials, hardware, garden supply and mobile home dealers (SIC 52).

  - General merchandise stores (SIC 53).

  - Food stores (SIC 54).

  - Automotive dealers and gasoline service stations (SIC 55).

  - Apparel and accessory stores (SIC 56).

  - Furniture, home furnishings, and equipment stores (SIC 57).

- Eating and drinking places (SIC 58).

- Small establishments of the retail trade sector spend $5.0 billion annually on equipment and services, including:

  - EDP equipment.

  - EDP services.

  - Office equipment.

  - Communications equipment.

  - Communications services.

  - Supplies.

- The industry subsector which is the focus of this section is the general merchandise stores industry (SIC 53). The general merchandise stores industry follows the general trends found in the retail sector with the exception of a much higher concentration of establishments in the larger size categories:

  - Over 700 enterprises have more than 500 employees; but most of these firms have smaller branch locations.

  - Thirty-one percent of general merchandise stores have 20-499 employees, compared to only 10 percent of all retail establishments.

- There are slight regional concentrations of general merchandise stores, as shown in Exhibit V-108. Over 35 percent of the industry is located on the eastern seaboard, and over 25 percent of the industry is in the sun belt. This pattern is similar to the other retail industries and follows the general distribution of population.

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

- About one-third of all general merchandise stores have EDP equipment installed, but there are great differences between branch and independent locations (see Exhibit V-109). Respondents from independent establishments with less than 20 employees stated that they have no EDP equipment installed, whereas 50 percent of respondents from branch establishments with less than 20 employees stated that they do. In the other size categories, independents exceed branches in EDP equipment installed by a ratio of one and one-half, or two to one.

- Although many locations have installed cash registers that are capable of being used as point-of-sale terminals, few establishments have actually hooked them up to a computer.

- Few general merchandise stores use computer services, but those that do are all independents.

  - No respondents from branches of large enterprises with more than 20 employees stated that they would even consider using computer services (see Exhibit V-110).

  - Twenty-nine percent of respondents from independent enterprises with more than 100 employees were using computer services and an additional 14 percent would consider using services (see Exhibit V-111).

- EDP penetration in general merchandise stores is among the lowest of all industries interviewed. On the average, only 64 percent of respondents from establishments with more than 100 employees used EDP equipment or computer services, while only about one-third of smaller establishments were EDP users (see Exhibit V-112).

  - Independent establishments with more than 20 employees outnumbered branch locations as EDP users by a ratio of three to one.

- There is no reported use of word processing equipment by general merchandise stores. This is the only industry sector to report such a phenomenon.

- On-site switching equipment is used by 54 percent of all respondents (keyset or PABX - see Exhibit V-113).

- There are wide disparities in usage of WATS lines between branches and independents, but otherwise branches and independents are similar in their use of communication services (see Exhibit V-114).

  - One hundred percent of branch locations used WATS lines while only 33 percent of respondents from independent establishments had WATS lines.

- Most respondents stated that they use telephone company-supplied equipment. Only 14 percent of the largest independent respondents used interconnect communications equipment (see Exhibit V-115).

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-116, V-117, and V-118 show that respondents use EDP more for financial/administrative functions than for sales/marketing or industry specific functions, and that larger respondents are more than twice as automated as medium and small respondents. Almost no growth in number of applications automated is planned by respondents for the next five years.

- Eighty-two percent of respondents from establishments with more than 100 employees used EDP for administrative functions, compared to 55 percent for sales/marketing functions, and 41 percent for industry specific functions.

- At most, 31 percent of medium-sized establishments and 8 percent of the smallest establishments have automated financial/administrative applications.

- The only expansion of EDP applications is planned by establishments with 20-99 employees in the financial/administrative area, and by establishments with less than 20 employees in industry specific applications.

- General merchandise establishments used EDP for the normal group of administrative applications (see Exhibit V-119). There are no particular differences between branches and independents in this area.

- However, many more branches than independents have automated sales/marketing functions:

  - For example, 33 percent of branches have automated sales analysis, compared to only 10 percent for independents.

- Exhibit V-120 shows that among branches, automation is much more extensive among the 100 plus employee group of stores than at the 20-99 employee level.

  - Sixty percent of the larger stores have automated sales analysis compared to only 12 percent of the 20-99 employee size group.

- Among independents, the same pattern exists but the spread is not as great and the overall level is lower (see Exhibit V-121):

- Twenty-nine percent of the larger independents have automated sales analysis, compared to 8 percent of medium-sized independents:

- The automation level for industry specific functions in retail stores is surprisingly low, amounting at most to 13 percent for inventory control among independents, and 18 percent for purchasing among branches (see Exhibit V-122):

  - Automation of purchasing is almost evenly divided between medium and larger branch establishments, at 19 percent and 20 percent respectively (see Exhibit V-123).

  - Automation of inventory control is almost exclusively the province of larger establishments, including 20 percent of larger branch establishments and 43 percent of larger independents. Only 8 percent of medium-sized independents report that they have automated inventory control (see Exhibits V-124 and V-125).

- In general, there are very few plans to automate any additional applications in the next five years.

4. EDP, OFFICE AND COMMUNICATION NEEDS

- Among general merchandise stores over 50 percent of respondents expressed further EDP needs, but very few respondents expressed needs for office and communication automation (see Exhibit V-126).

- EDP needs were expressed almost entirely in terms of cash registers and/or sales transactions and are a strong impetus to the introduction of multi-function equipment that is "human-engineered," especially in terms of its familiar appearance. Related comments from respondents:

  - "Connect cash registers to main computers."

- "Change in point of sale system."

- "Transmission of data improvements."

- "Will install some computer within two years."

- "A more sophisticated register that could display profit margins."

- Office needs were expressed by only 2 percent of respondents, all from establishments with more than 100 employees. This is an indication of the generally low level of automation in the retail sector.

- Communications needs were expressed by 6 percent of respondents at both the large and small end of the scale, but none among medium-sized establishments. Communications needs will likely increase with the greater use of computerization, but will not precede it.

5. EXPENDITURES

- Expenditures for EDP, office, and communications equipment and services were over $5.0 billion annually in the retail sector (see Exhibits V-126 and V-127). Over 81 percent of expenditures for automated equipment, services, and supplies were from establishments with less than 100 employees. This is the second highest level of expenditure for any industry sector, reflecting the more than one million establishments in the sector. However, the rate of expenditure per employee is the lowest of any sector, and is less than half the rate of utilities, the highest sector:

  - Annual expenditures for EDP equipment, services and supplies were $1.2 billion or $105 per employee.

  - Annual expenditures for office equipment were $1.0 billion or $92 per employee.

- Annual expenditures for communications equipment and services were almost $2.8 billion or $244 per employee.

EXHIBIT V-107

STRUCTURE OF RETAIL TRADE AND GENERAL MERCHANDISE STORES
(BY SIZE OF ESTABLISHMENT, 1975)

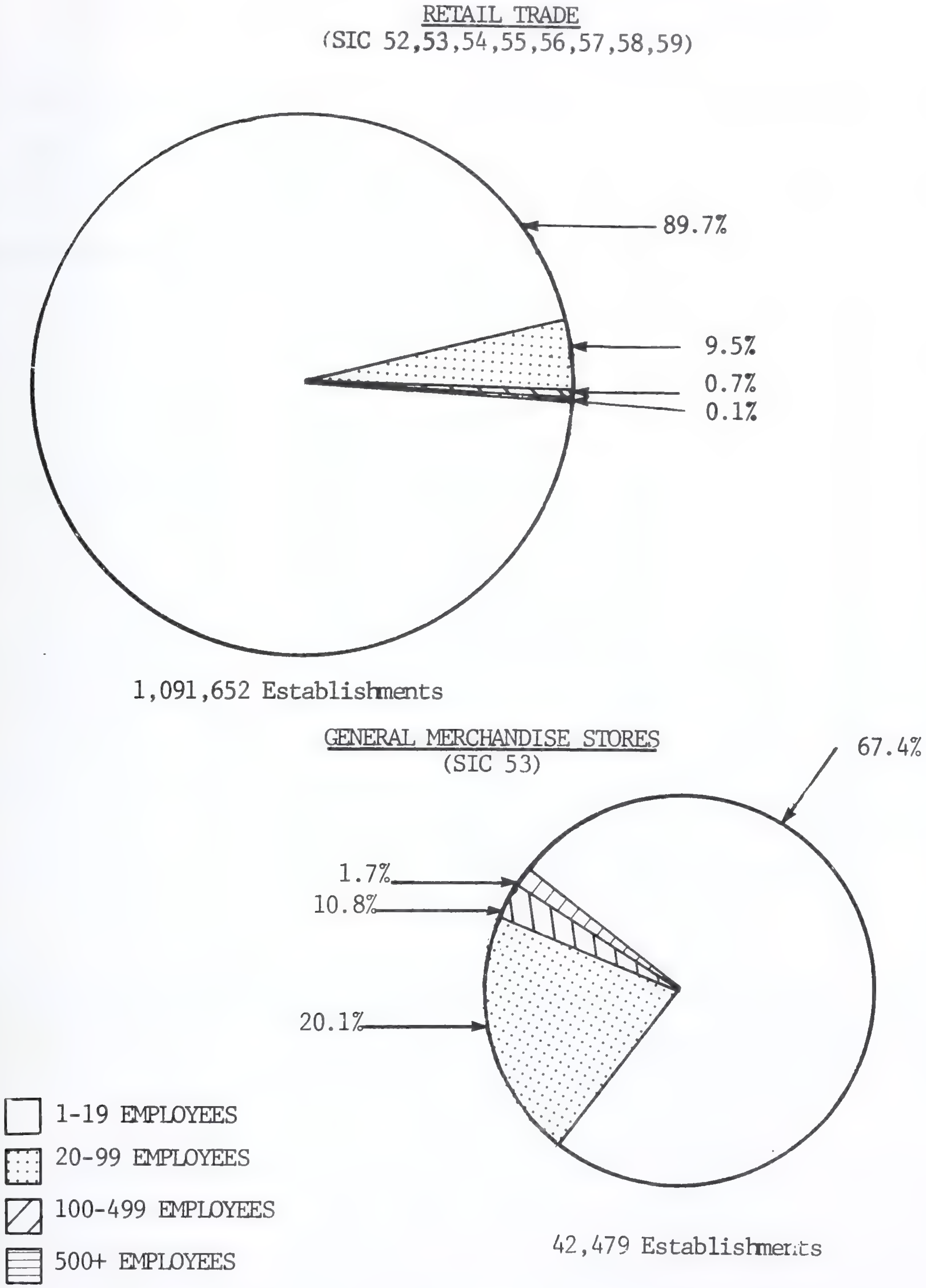


EXHIBIT V-108

DISTRIBUTION OF GENERAL MERCHANDISE STORE ESTABLISHMENTS (BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	1122	2.7 %	MT	199	0.5%
AK	90	0.2	NE	404	1.0
AZ	465	1.1	NV	95	0.2
AR	677	1.6	NH	239	0.6
CA	2847	6.8	NJ	959	2.3
CO	430	1.0	NM	327	0.8
CT	442	1.1	NY	2556	6.1
DE	111	0.3	NC	1607	3.8
DC	63	0.9	ND	176	0.4
FL	1625	3.9	OH	1687	4.0
GA	1284	3.1	OK	740	1.8
HI	180	0.4	OR	366	0.9
ID	221	0.5	PA	1875	4.5
IL	1742	4.2	RI	145	0.3
IN	1062	2.5	SC	813	1.9
IA	782	1.9	SD	212	0.5
KS	1024	2.4	TN	1142	2.7
KY	1011	2.4	TX	2711	6.4
LA	946	2.2	UT	207	0.5
ME	357	0.8	VT	193	0.5
MD	573	1.4	VA	1166	2.8
MA	922	2.2	WA	449	1.1
MI	1122	2.7	WV	561	1.3
MN	735	1.7	WI	932	2.2
MS	808	1.9	WY	118	0.3
MO	1237	3.0			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				42,757	100.0%

EXHIBIT V-109

GENERAL MERCHANDISE STORES: EDP EQUIPMENT INSTALLED
(BY TYPE AND SIZE OF ESTABLISHMENT)

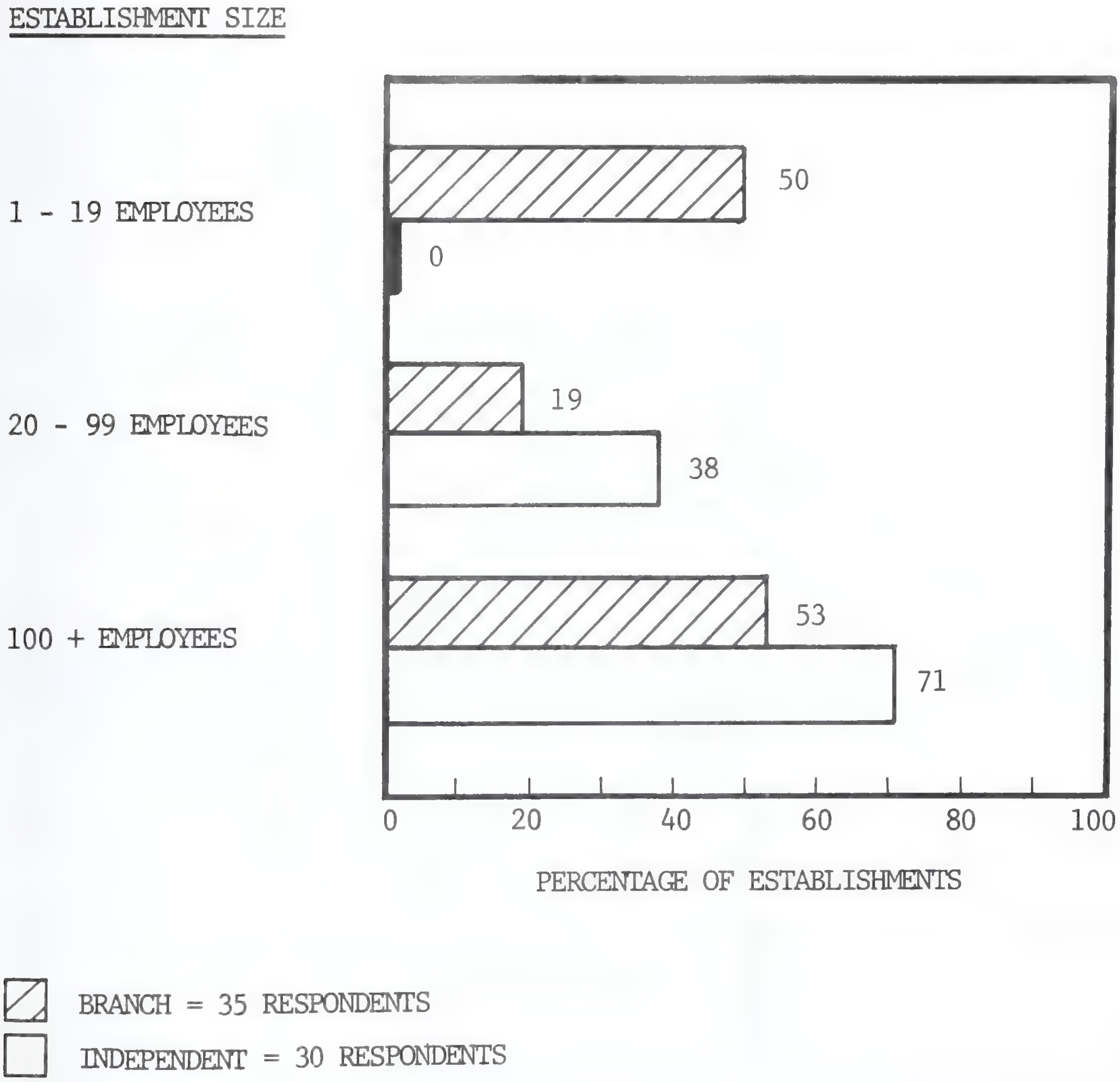


EXHIBIT V-110

GENERAL MERCHANDISE STORES: USE OF COMPUTER SERVICES - BRANCHES

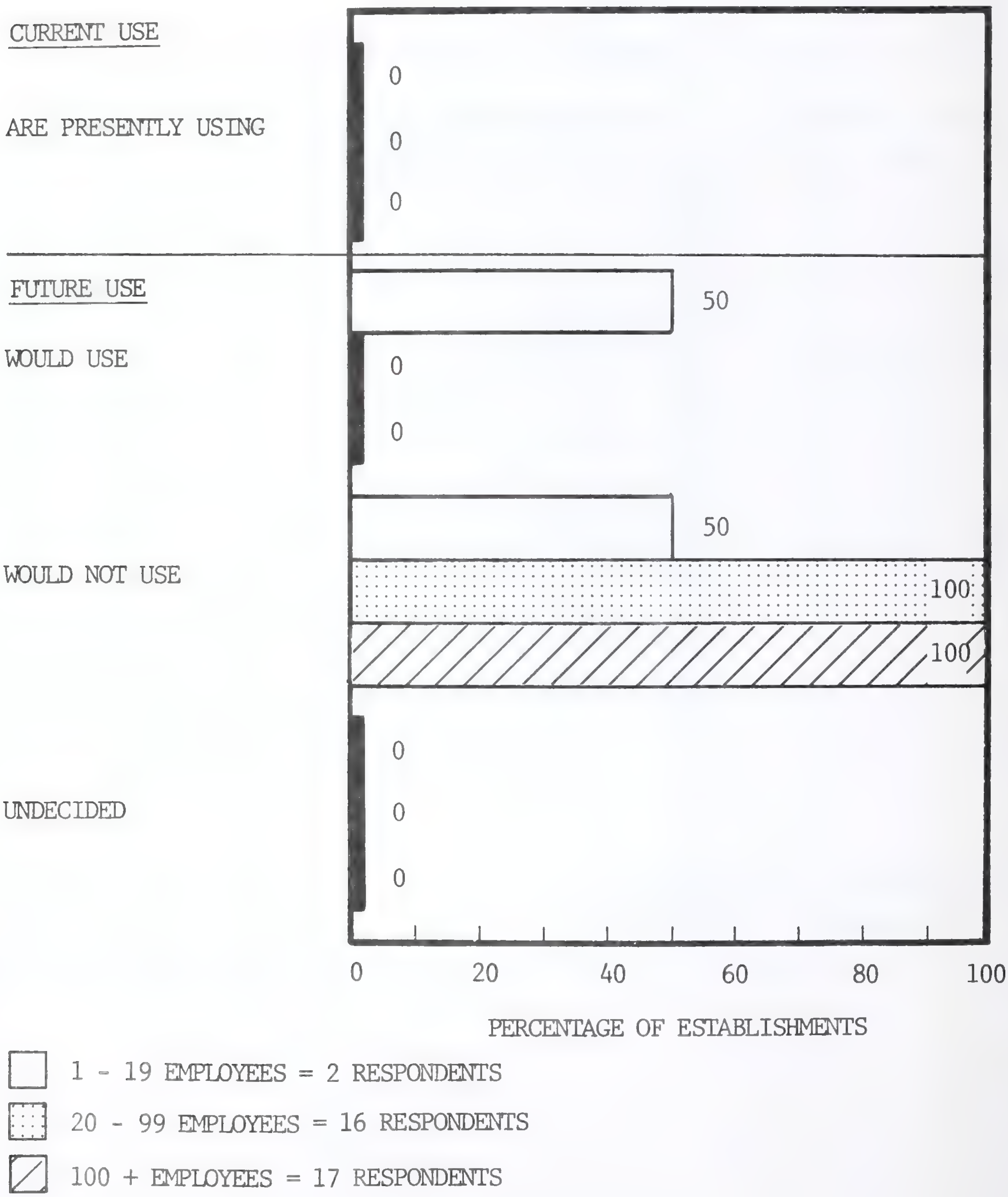


EXHIBIT V-111

GENERAL MERCHANDISE STORES:
USE OF COMPUTER SERVICES - INDEPENDENTS

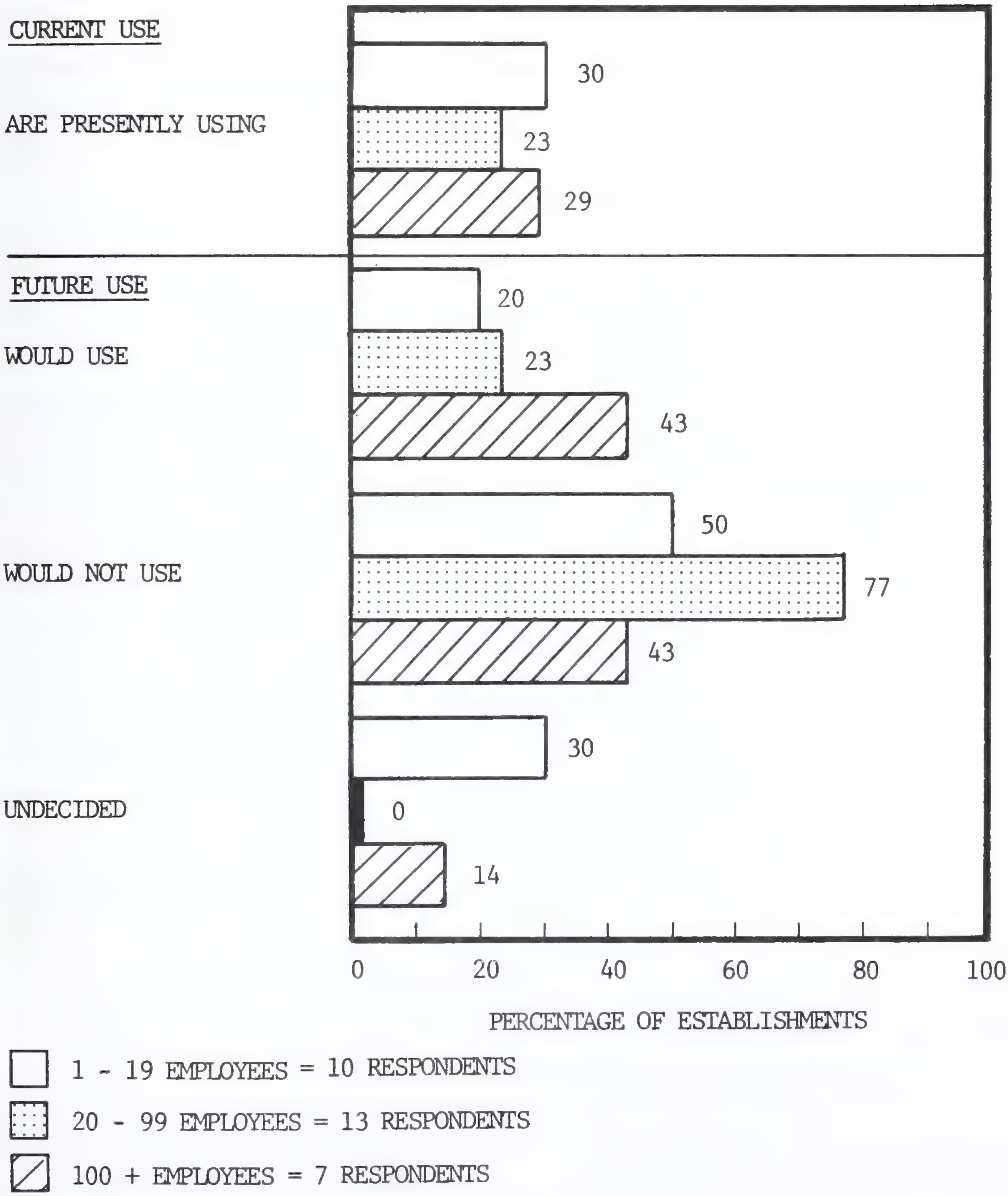


EXHIBIT V-112

GENERAL MERCHANDISE STORES:
PENETRATION OF EDP EQUIPMENT/SERVICES
(BY SIZE OF ESTABLISHMENT)

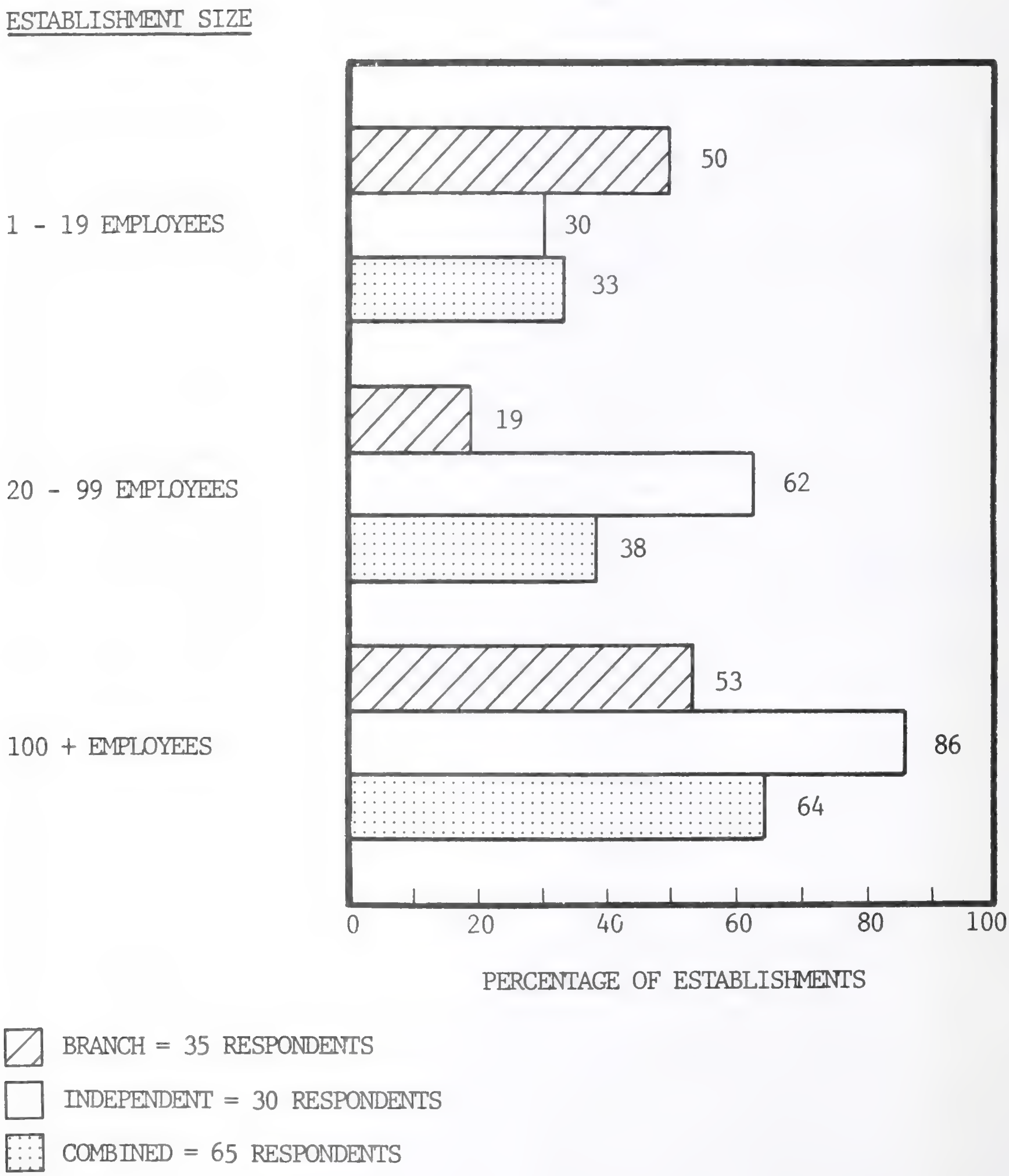


EXHIBIT V-113

GENERAL MERCHANDISE STORES:
COMMUNICATIONS EQUIPMENT INSTALLED -
BRANCHES AND INDEPENDENTS

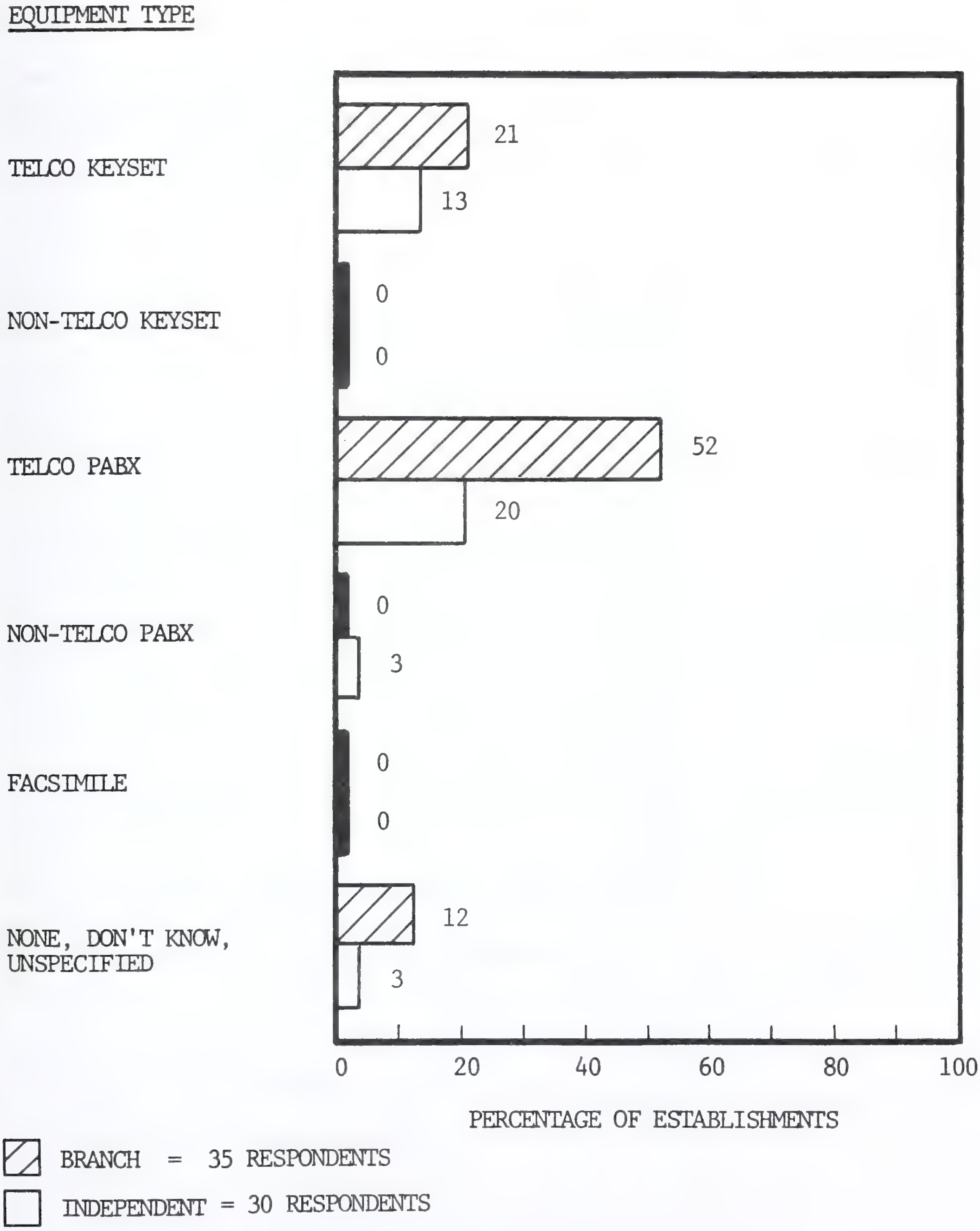


EXHIBIT V-114

GENERAL MERCHANDISE STORES:
COMMUNICATIONS SERVICES INSTALLED -
BRANCHES AND INDEPENDENTS

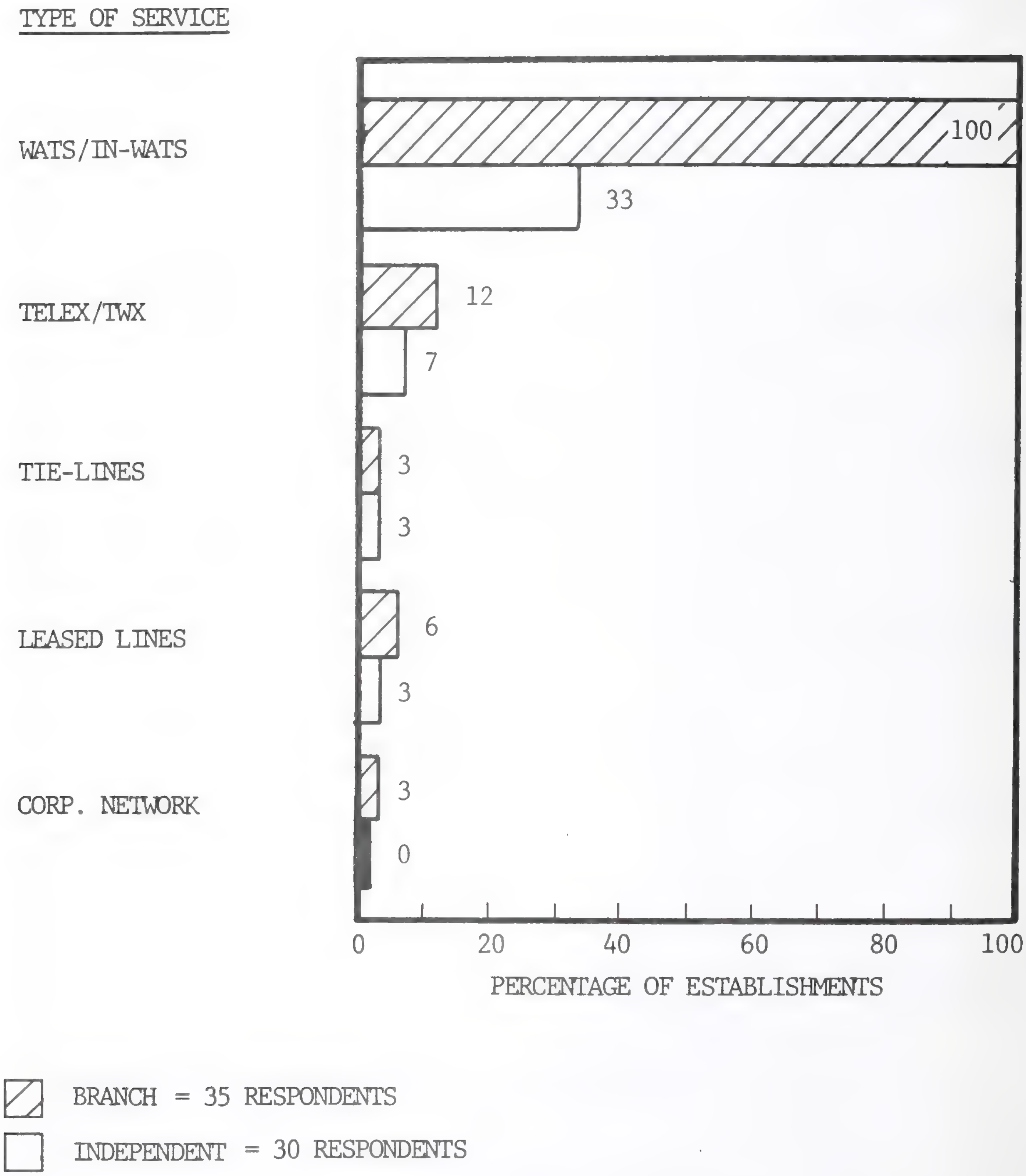


EXHIBIT V-115

GENERAL MERCHANDISE STORES:
PENETRATION OF COMMUNICATIONS EQUIPMENT/SERVICES
(BY SIZE OF ESTABLISHMENT)

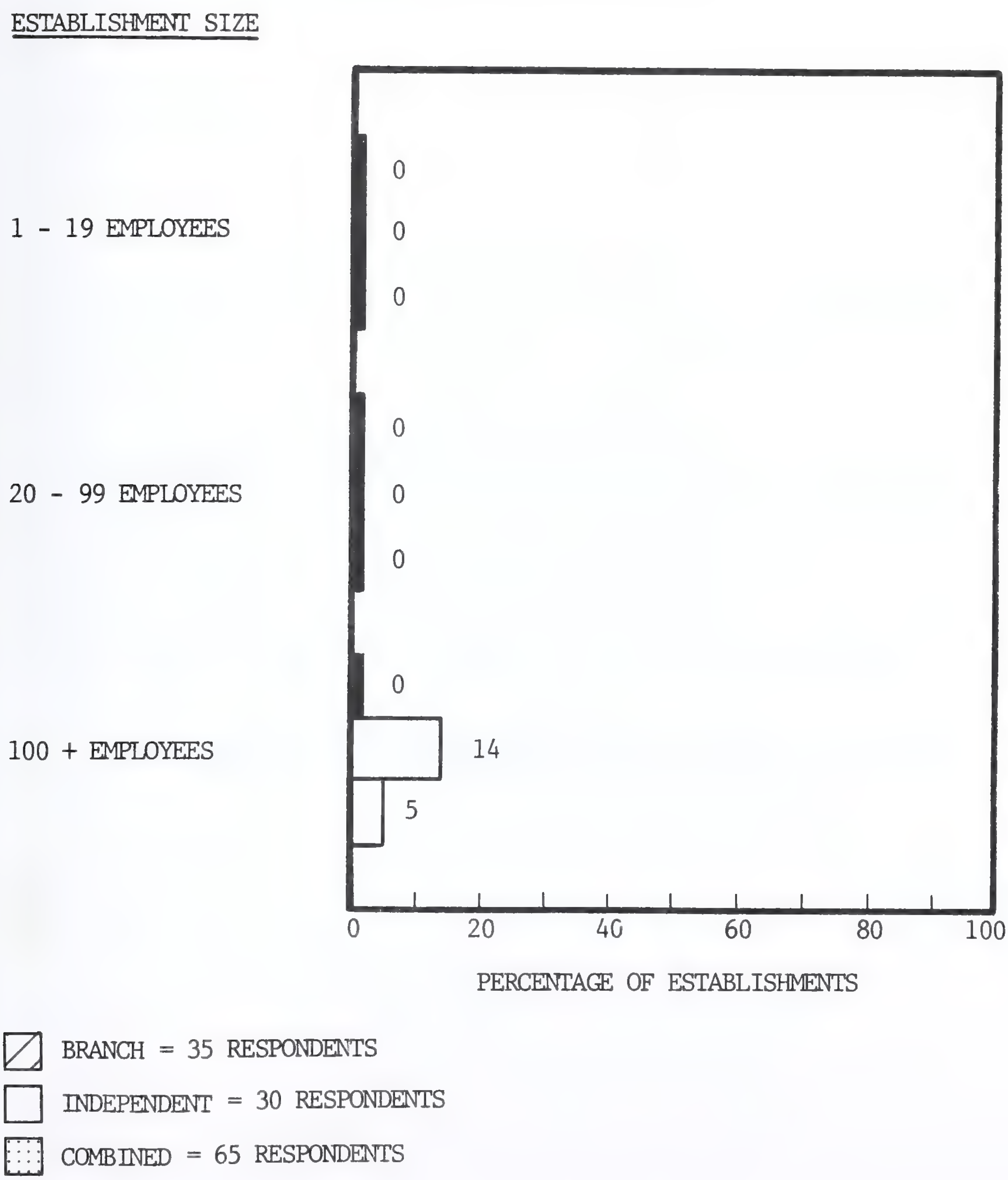


EXHIBIT V-116

GENERAL MERCHANDISE STORES:
USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978-1983
(BY SIZE OF ESTABLISHMENT)

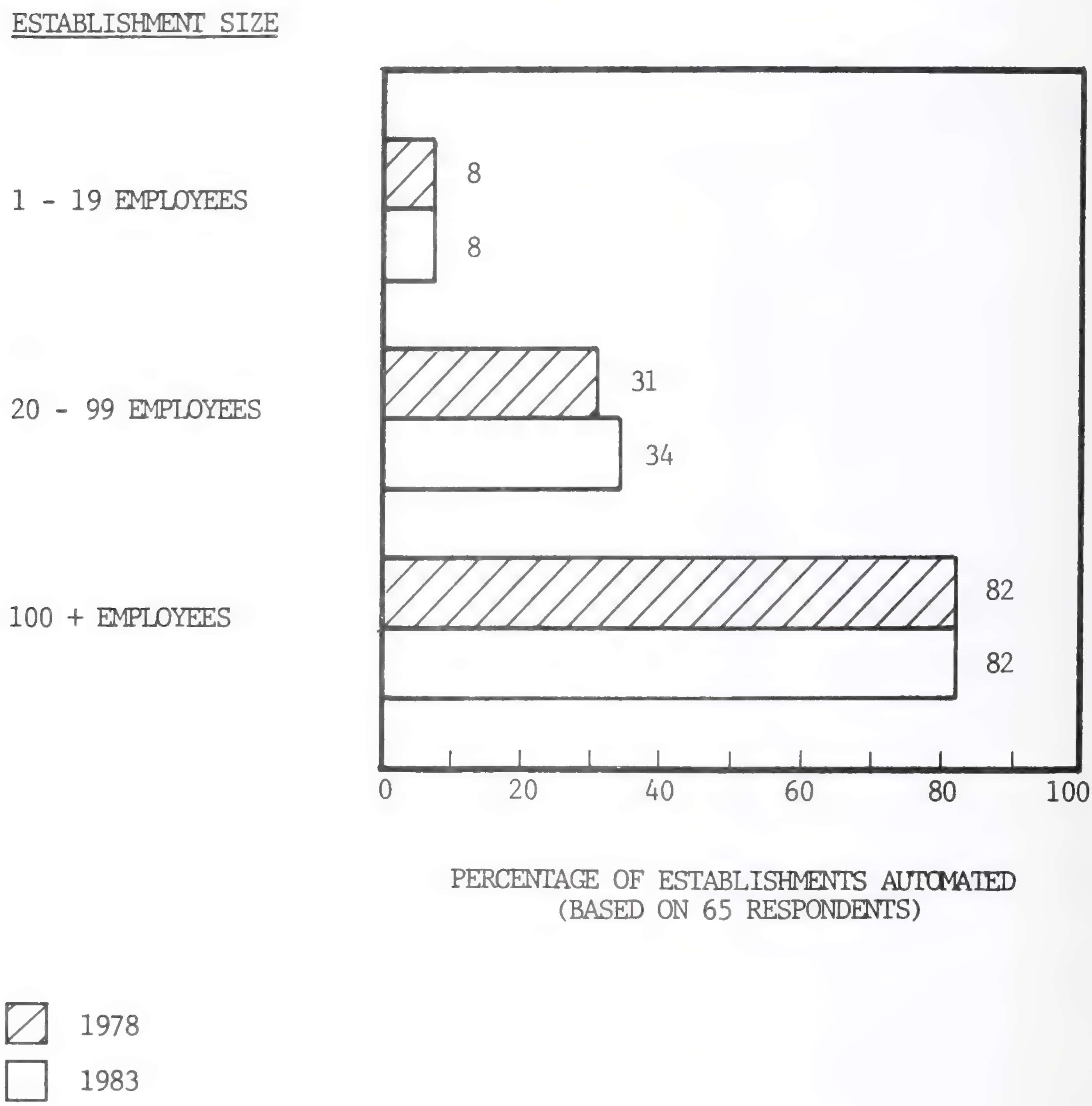


EXHIBIT V-117

GENERAL MERCHANDISE STORES: USE OF EDP FOR SALES/MARKETING FUNCTIONS 1978-1983 (BY SIZE OF ESTABLISHMENT)

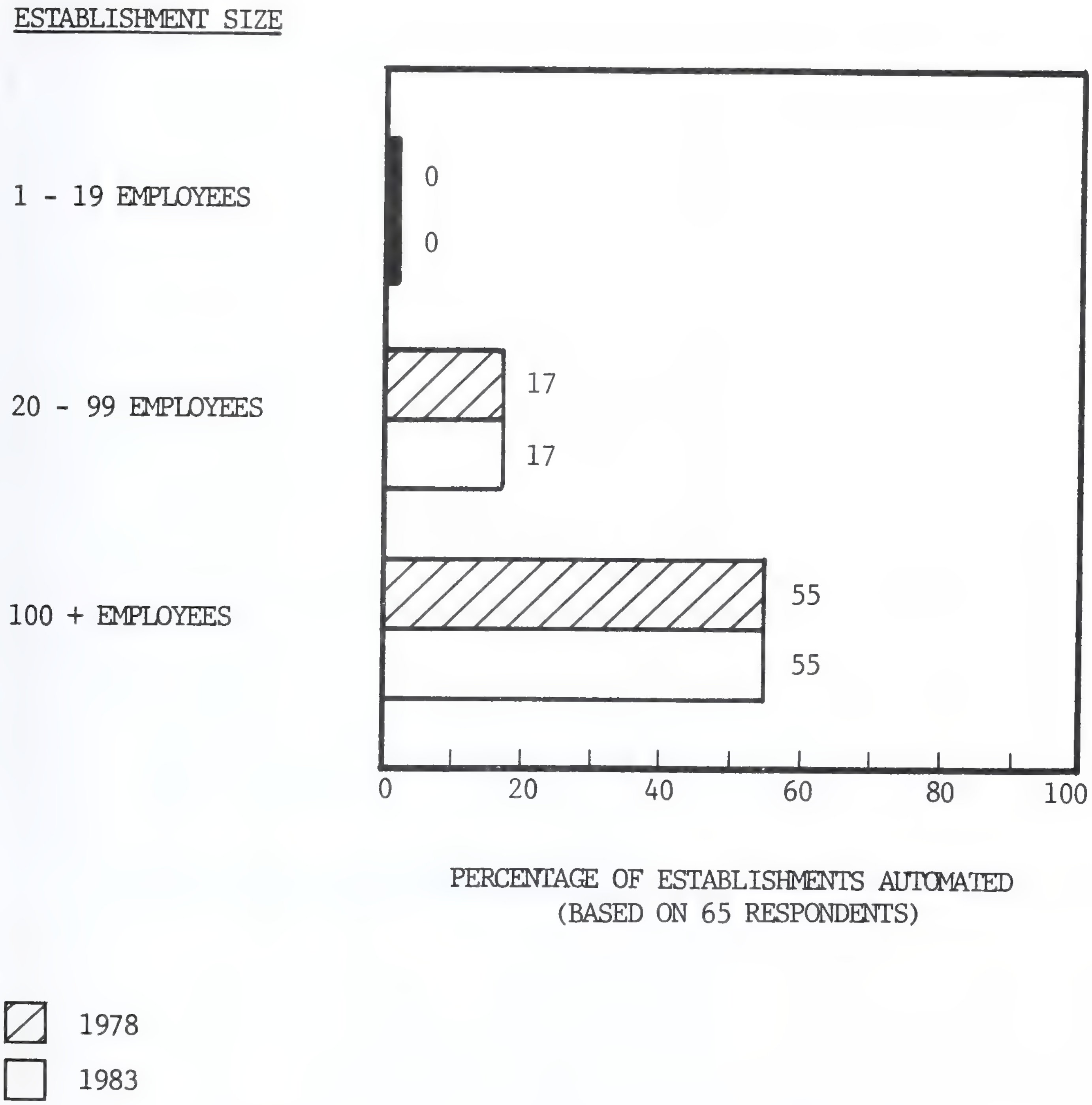


EXHIBIT V-118

GENERAL MERCHANDISE STORES:
USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978-1983
(BY SIZE OF ESTABLISHMENT)

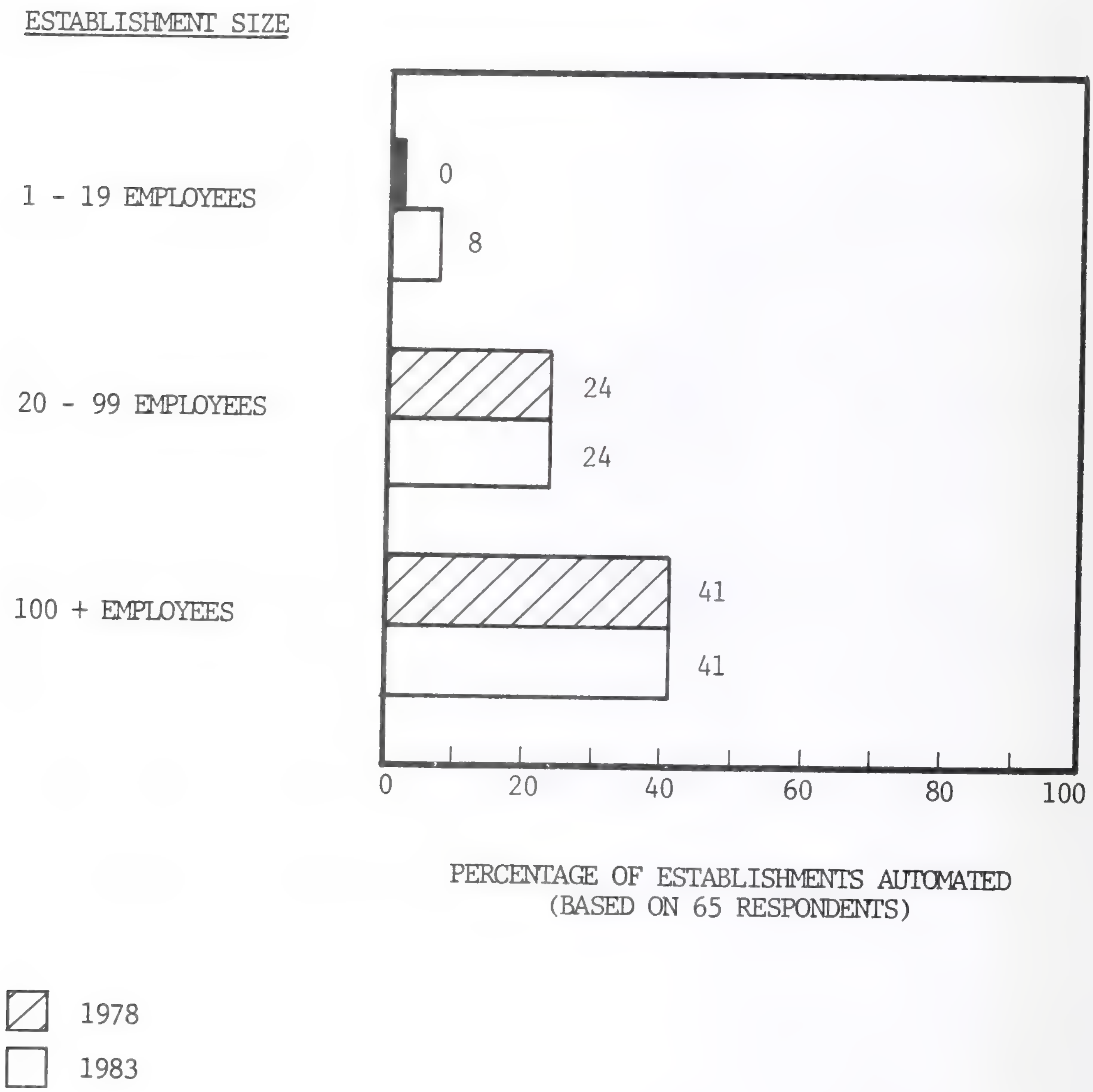


EXHIBIT V-119

GENERAL MERCHANDISE STORES:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N = 30)			BRANCHES (N = 35)		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	3%	7%	-	-	27%	-
Sales Analysis	3	10	-	-	33	-
Credit Authorization	7	10	-	-	24	-
Other Marketing	-	3	-	-	3	-
FINANCE & ACCOUNTING						
Payroll	20	43	3	-	42	-
Billing	17	43	3	-	42	-
Accounts Receivable	17	47	3	-	42	-
Accounts Payable	17	47	3	-	36	-
General Ledger	13	40	3	-	33	-
Other Finance	-	3	-	-	18	-

*On each question there was a varying percentage of "No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-120

GENERAL MERCHANDISE STORES: ADMINISTRATIVE/SALES APPLICATION ANALYSIS - BRANCHES

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 2)			20 - 99 EMPLOYEES (N = 16)			100 + EMPLOYEES (N = 17)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	-	-	-	-	25%	-	-	33%	-
Sales Analysis	-	-	-	-	12	-	-	60	-
Credit Authorization	-	-	-	-	12	-	-	40	-
Other Marketing	-	-	-	-	-	-	-	7	-
FINANCE AND ACCOUNTING									
Payroll	-	-	-	-	12	-	-	80	-
Billing	-	-	-	-	12	-	-	80	-
Accounts Receivable	-	-	-	-	12	-	-	80	-
Accounts Payable	-	-	-	-	18	-	-	80	-
General Ledger	-	-	-	-	12	-	-	73	-
Other Finance	-	50	-	-	6	-	-	33	-

*On each question there was a varying percentage of 'No Responses.' Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-121

GENERAL MERCHANDISE STORES:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS - INDEPENDENTS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 10)			20 - 99 EMPLOYEES (N = 13)			100 + EMPLOYEES (N = 7)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	-	-	-	8%	8%	-	-	14%	-
Sales Analysis	-	-	-	-	8	-	14	29	-
Credit Authorization	-	-	-	8	-	-	14	43	-
Other Marketing	-	-	-	-	-	-	-	14	-
FINANCE AND ACCOUNTING									
Payroll	30	20	-	15	46	8	14	71	-
Billing	30	20		8	46	8	14	71	-
Accounts Receivable	30	20	-	8	46	8	14	86	-
Accounts Payable	30	20	-	8	46	8	14	86	-
General Ledger	20	20	-	8	38	8	14	71	-
Other Finance	-	-	-	-	-	-	-	14	-

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-122

GENERAL MERCHANDISE STORES: INDUSTRY SPECIFIC APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=30)			BRANCHES (N=35)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Order Allocation	-	3%	-	-	12%	-
Shipping	3	-	-	-	3	-
Stock Replenishment	-	3	-	-	3	-
Other Warehousing	-	-	-	-	3	-
Inventory Control	27	13	3	-	9	-
Receiving	3	-	-	-	3	-
Purchasing	-	10	-	-	18	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-123

GENERAL MERCHANDISE STORES: INDUSTRY SPECIFIC APPLICATION ANALYSIS - BRANCHES

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 2)			20 - 99 EMPLOYEES (N = 16)			100 + EMPLOYEES (N = 17)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Order Allocation	-	-	-	19%	-	-	-	7%	-
Shipping	-	-	-	6	-	-	-	-	-
Stock Replenishment	-	-	-	-	-	-	-	7	-
Other Warehousing	-	-	-	-	-	-	-	7	-
Inventory Control	-	-	-	-	-	-	-	20	-
Receiving	-	-	-	-	-	-	-	7	-
Purchasing	-	-	-	19	-	-	-	20	-

*On each question there was a varying percentage of 'No Responses.'' Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-124

GENERAL MERCHANDISE STORES:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 10)			20 - 99 EMPLOYEES (N = 13)			100 + EMPLOYEES (N = 7)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Order Allocation	-%	-%	-%	-%	8%	-%	-%	-%	-%
Shipping	-	-	-	8	-	-	-	-	-
Stock Replenishment	-	-	-	-	8	-	-	-	-
Other Warehousing	-	-	-	-	-	-	-	-	-
Inventory Control	40	-	10	8	8	-	43	43	-
Receiving	-	-	-	8	-	-	-	-	-
Purchasing	-	-	-	-	-	-	-	43	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-125

GENERAL MERCHANDISE STORES:
EDP, OFFICE, AND COMMUNICATION NEEDS
(BY SIZE OF ESTABLISHMENT)

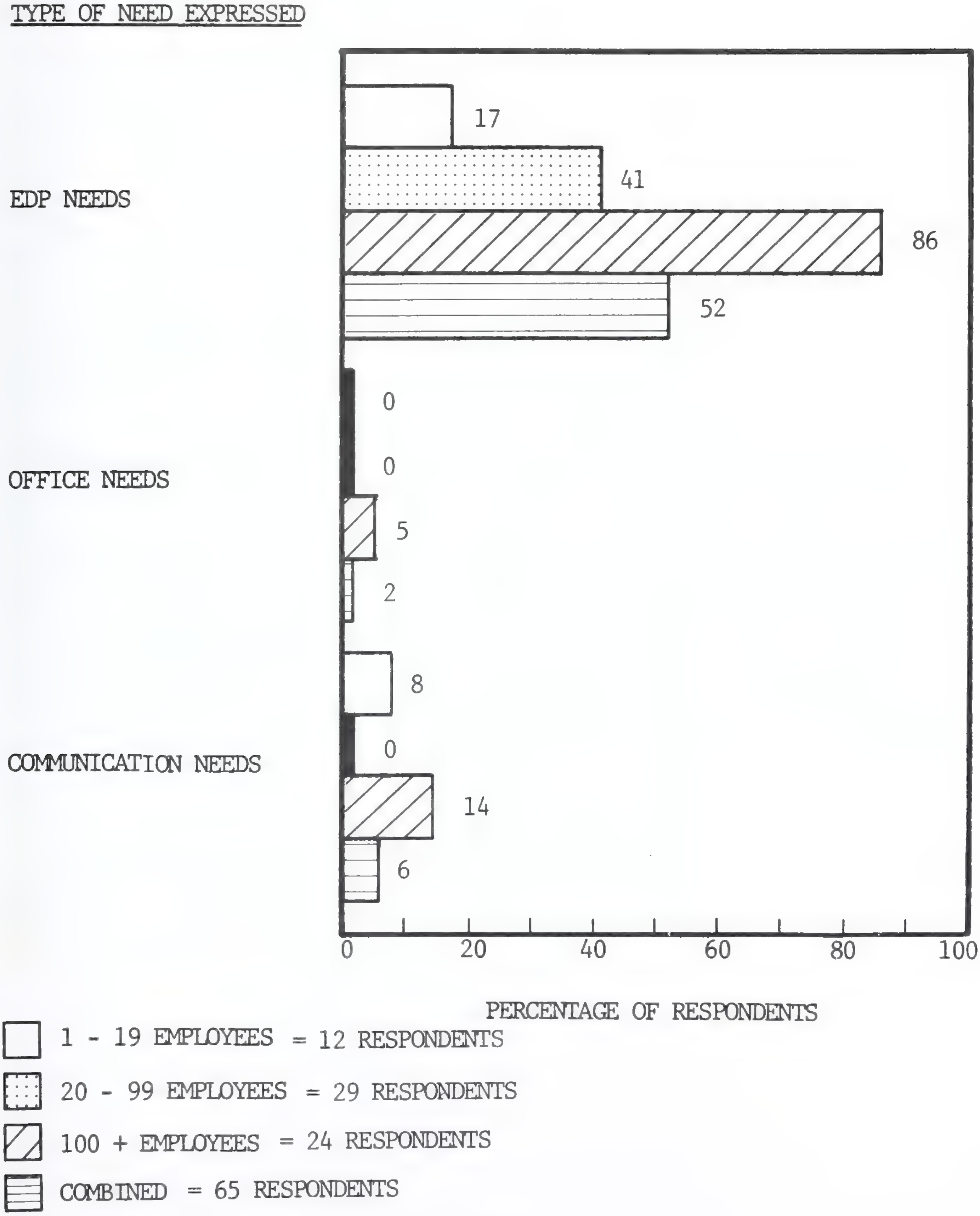


EXHIBIT V-126

TOTAL CURRENT EXPENDITURES OF THE RETAIL TRADE SECTOR

EXPENDITURE CLASSIFICATION	1 - 19 EMPLOYEES	20 - 99 EMPLOYEES	100 - 499 EMPLOYEES	TOTAL
EDP EQUIPMENT SERVICES, AND SUPPLIES	$415.0M	$478.0M	$317.0M	$1,210M
OFFICE EQUIPMENT	$442.4M	$443.5M	$175.1M	$1,061M
COMMUNICATIONS EQUIPMENT AND SERVICES	$1,165.1M	$1,167.9M	$461.0M	$2,794M
TOTAL	$2,022.5M	$2,089.4M	$953.1M	$5,065M

EXHIBIT V-127

AVERAGE CURRENT EXPENDITURES OF THE RETAIL TRADE SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$105	0.3%
OFFICE EQUIPMENT	92	0.3
COMMUNICATIONS EQUIPMENT & SERVICES	244	0.7

H. BANKING AND FINANCE

H. BANKING AND FINANCE

I. INDUSTRY CHARACTERISTICS

- The banking and finance sector ranks among the highest industry sectors both in its use of and desire for more automated equipment and services. Penetration of EDP equipment is far above the average for all small establishments, and this industry has the highest percentage of use of outside computer services. Use of word processing and communications interconnect equipment is also above average. Further needs for computer equipment and services have been expressed by more than sixty percent of respondents.

- The banking and finance sector is comprised almost entirely of small establishments (see Exhibit V-128). Over 70,000 establishments, more than 99 percent of all establishments in the banking and finance sector, have less than 500 employees, and altogether employ 1.56 million people. The industries contained in the banking and finance sector are:

  - Banking (SIC 60).

  - Credit agencies (SIC 61).

  - Security and commodity brokers, dealers, exchanges, and services (SIC 62).

  - Holding and other investment offices (SIC 67).

- Small establishments of this sector spend $1.4 billion annually on equipment and services, including:

  - EDP equipment.

- EDP services.

- Office equipment.

- Communications equipment.

- Communications services.

- Supplies.

- The industry subsector which is the focus of this section is the banking industry (SIC 60). The banking industry follows the general trends found in the banking and finance sector:

  - Over six hundred enterprises, including all of the Fortune 50 list of commercial banking companies, have more than 500 employees. Most of these firms have small establishment branch locations that qualify for inclusion in this study.

- There are slight regional concentrations in the banking industry, as shown in Exhibit V-129. Almost 20 percent of all small establishments are located in California and New York and another 16 percent in Illinois, Ohio, and Pennsylvania.

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

- Eighty percent of all banking small establishments use their own EDP equipment. There are few differences between branch and independent locations (see Exhibit V-130):

  - Sixty percent of establishments with less than 20 employees had their own EDP equipment installed.

- In addition, approximately half of all respondents used computer services, but there were wide disparities in computer services usage between independent and branch locations (see Exhibits V-131 and V-132).

  - Independents use computer services almost twice as much as Fortune 50 branch establishments.

  - No respondents from branch locations with more than 100 employees stated that they use or would consider using computer services. A common reason from branch respondents for not using computer services was access to a corporate owned computer.

  - Seventy-five percent of the smallest respondents from independent enterprises and 88 percent of medium-sized respondents use computer services.

- EDP penetration in the banking industry is over 90 percent (see Exhibit V-133). One hundred percent of respondents from independent establishments reported using computer equipment or services.

- The banking industry is above average in its acceptance of word processing equipment.

  - Almost 15 percent of all respondents were using word processing equipment, ranging from 67 percent of respondents from branch location establishments with more than 100 employees down to zero percent of respondents from independent establishments with fewer than 20 employees (see Exhibit V-134).

- Over 75 percent of all respondents used keyset equipment (see Exhibit V-135).

- There are wide disparities in usage of communications services between branches and independents (see Exhibit V-136):

- Branch locations use communications services about twice as much as independent establishments do.

- Fifty-two percent of branch locations use tie lines, primarily for data communications.

- Almost all equipment was supplied by the local telephone company; only 7 percent of large respondent establishments and 13 percent of those with 20-99 employees used non-telco communications (see Exhibit V-137).

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-138 and V-139 show that respondents use EDP equally for financial/administrative and for industry specific functions, and that they are virtually completely automated at all establishment size levels.

- General ledger is the only financial/administrative application that is less frequently automated (see Exhibit V-140):

  - By 1985, over 95 percent of respondents from independent establishments will use EDP for payroll, billing, accounts receivable, and accounts payable, and 89 percent for general ledger.

  - One hundred percent of branch locations are already using EDP for payroll, billing, accounts receivable, and accounts payable applications.

- Seventy-four percent of branch locations have automated the general ledger application, but there are no reported plans for additional branches to join this total.

- Exhibits V-141 and V-142 show that, as usual, the larger the establishment, the more likely it is to be fully automated.

- The most frequent use of EDP in an industry specific application is for demand deposits, since 97 percent of all respondents report using EDP for this application (see Exhibit V-143).

- There are differences in EDP usage for industry specific applications only among the smallest branches and independents (see Exhibit V-144 and V-145):

  - While the demand deposit application is essentially fully automated for both groups, the smallest independents lag somewhat behind branches in automating savings deposits, consumer loans, commercial loans, proof of deposit, and customer information systems.

  - Most of these applications will be automated also by independents within the next five years.

4. EDP, OFFICE AND COMMUNICATION NEEDS

- In the banking industry, most establishments have reported further needs for computer equipment and services but also significant percentages report office and communications needs (see Exhibit V-146):

  - Sixty-nine percent of respondents expressed further EDP needs.

  - Fifteen percent of respondents expressed further office needs.

  - Thirty percent of respondents expressed further communications needs.

- EDP needs were expressed predominantly by large establishments, including needs for specialized multi-function capabilities. All needs related to the faster availability of information, and are typical of a sector that is mature in its use of information processing. Many comments clearly specified "on-line" as a future requirement; for example:

  - "Need to go on-line because proofing and relay process is tedious."

  - "Combine data processing and word processing."

  - "Put word processing on computer."

  - "In-house system that would convey information quickly."

  - "Reduce time in relaying information."

  - "Need on-line teller terminals."

- Office needs were expressed by over one-third of all establishments with more than 100 employees. Many needs expressed were for word processing software packages that can utilize existing hardware.

- Communications needs were expressed by more than 50 percent of the largest establishments, and 20 percent of the smallest establishments. There was a noticeable interest in improved cost-effectiveness and data communications capabilities, as illustrated by comments such as:

  - "Purchase a phone system."

  - "Send and receive data through phones."

5. EXPENDITURES

- Expenditures by small establishments for EDP, office and communications equipment and services were over $1.4 billion annually in the banking and finance sector, as shown in Exhibits V-147 and V-148. Over 72 percent of expenditures for automated equipment, services, and supplies were from establishments with less than 100 employees. While the total of expenditures ranks sixth among the twelve sectors studied, the rate of expenditure per employee ranks first, by a substantial margin:

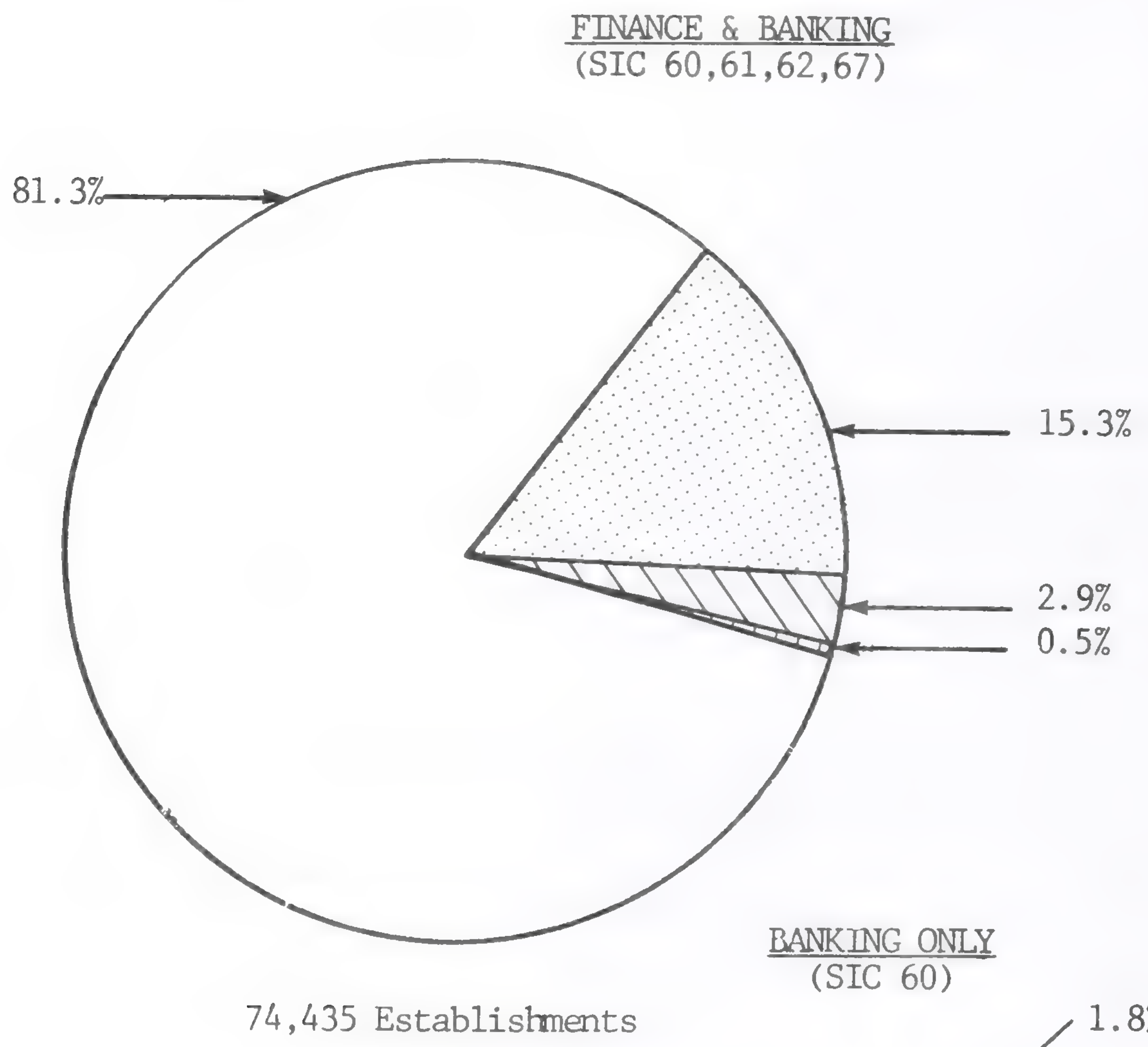
  - Annual expenditures for EDP equipment, services and supplies were $645 million or $414 per employee.

  - Annual expenditures for office equipment were $566 million or $363 per employee.

  - Annual expenditures for communications equipment and services were $1.492 billion or $957 per employee.

EXHIBIT V-128

STRUCTURE OF FINANCE AND BANKING INDUSTRIES
(BY SIZE OF ESTABLISHMENT, 1975)



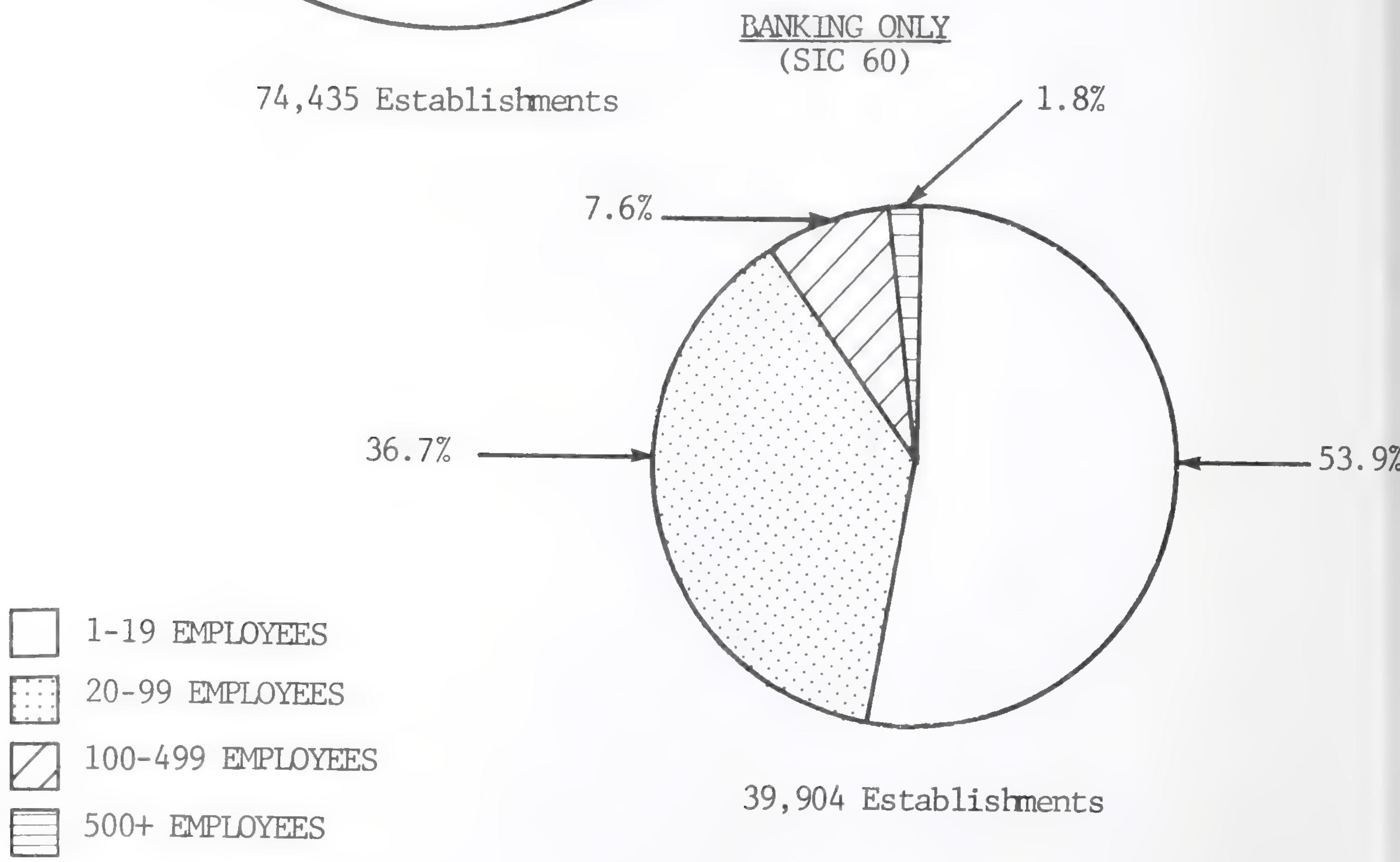


EXHIBIT V-129

DISTRIBUTION OF BANKING ESTABLISHMENTS
(BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	540	1.4%	MT	158	0.4%
AK	94	0.2	NE	476	1.2
AZ	378	1.0	NV	120	0.3
AR	298	0.8	NH	167	0.4
CA	3820	9.7	NJ	1391	3.5
CO	339	0.9	NM	175	0.5
CT	762	1.9	NY	3805	9.7
DE	168	0.4	NC	1087	2.8
DC	154	0.4	ND	190	0.5
FL	799	2.0	OH	1942	5.0
GA	869	2.2	OK	477	1.2
HI	154	0.4	OR	351	0.9
ID	149	0.4	PA	2489	6.4
IL	1882	4.8	RI	192	0.5
IN	1042	2.7	SC	482	1.2
IA	740	1.9	SD	238	0.6
KS	645	1.6	TN	817	2.1
KY	604	1.5	TX	1445	3.7
LA	595	1.5	UT	201	0.5
ME	323	0.8	VT	114	0.3
MD	822	2.1	VA	1066	2.7
MA	1322	3.4	WA	841	2.1
MI	1455	3.7	WV	217	0.6
MN	767	2.0	WI	702	1.8
MS	464	1.2	WY	86	0.2
MO	772	2.0			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				39,186	100.0%

EXHIBIT V-130

BANKING: EDP EQUIPMENT INSTALLED (BY TYPE AND SIZE OF ESTABLISHMENT)

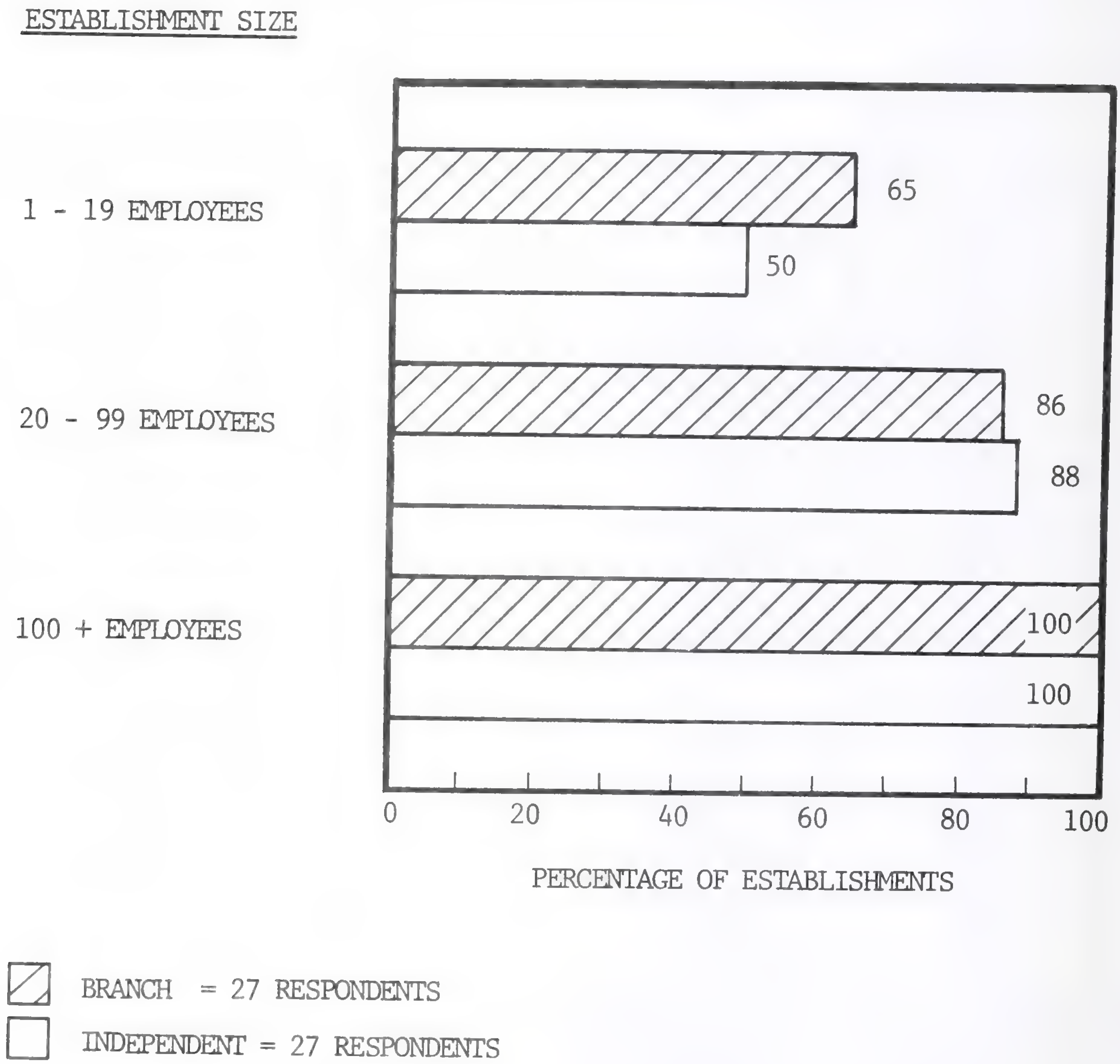


EXHIBIT V-131

BANKING: USE OF COMPUTER SERVICES - BRANCHES

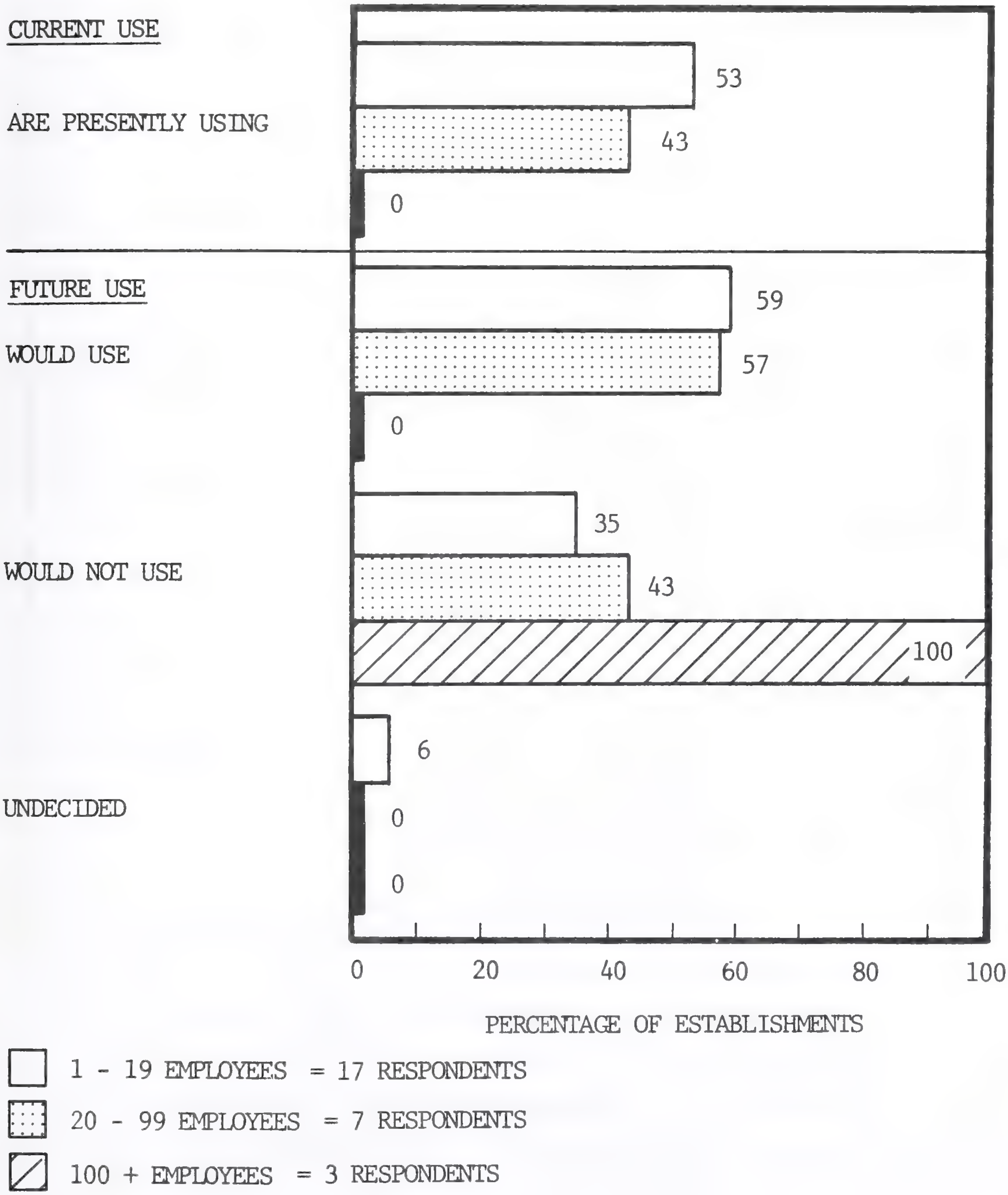


EXHIBIT V-132

BANKING: USE OF COMPUTER SERVICES - INDEPENDENTS

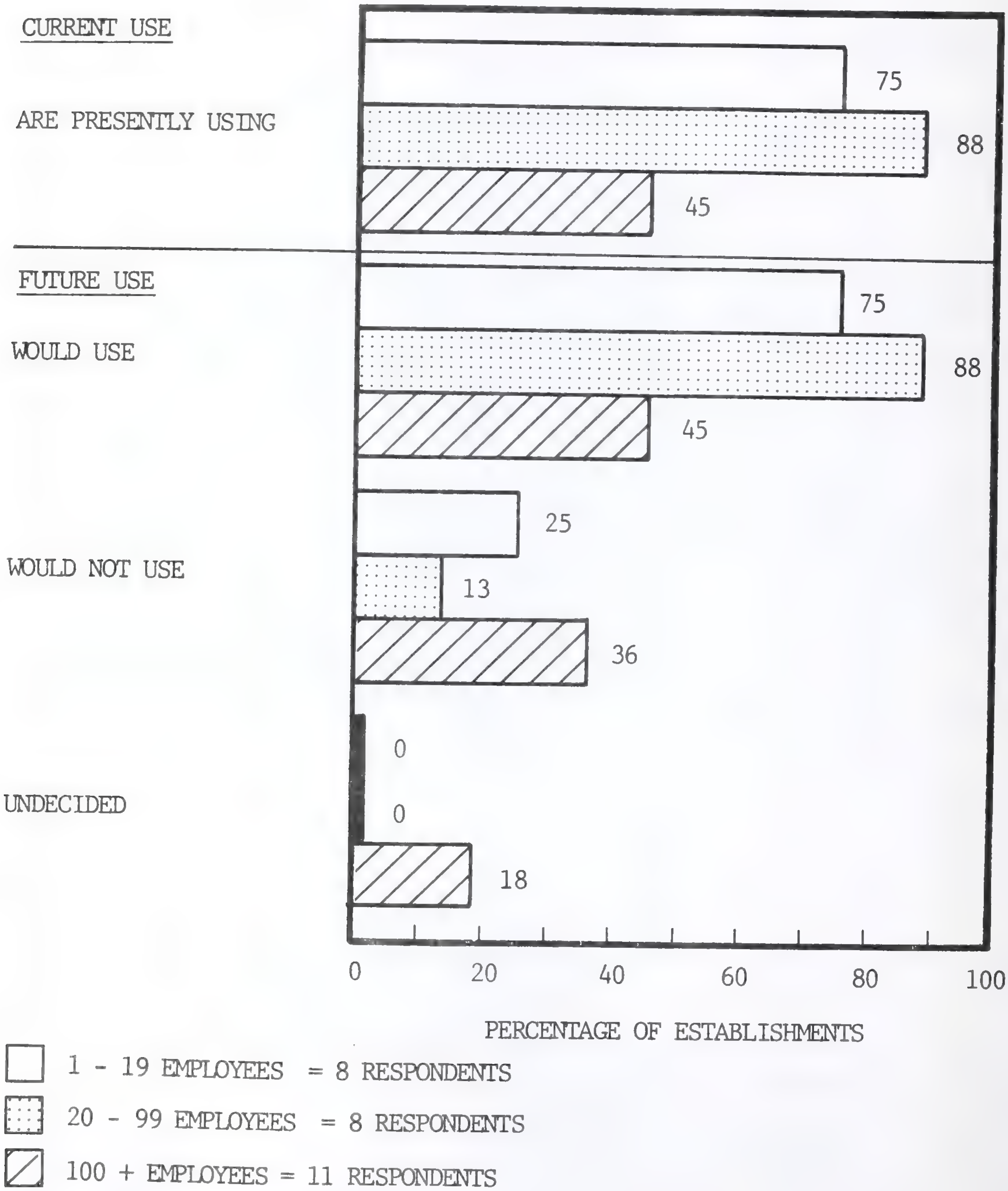


EXHIBIT V-133

BANKING: PENETRATION OF EDP EQUIPMENT/SERVICES
(BY SIZE OF ESTABLISHMENT)

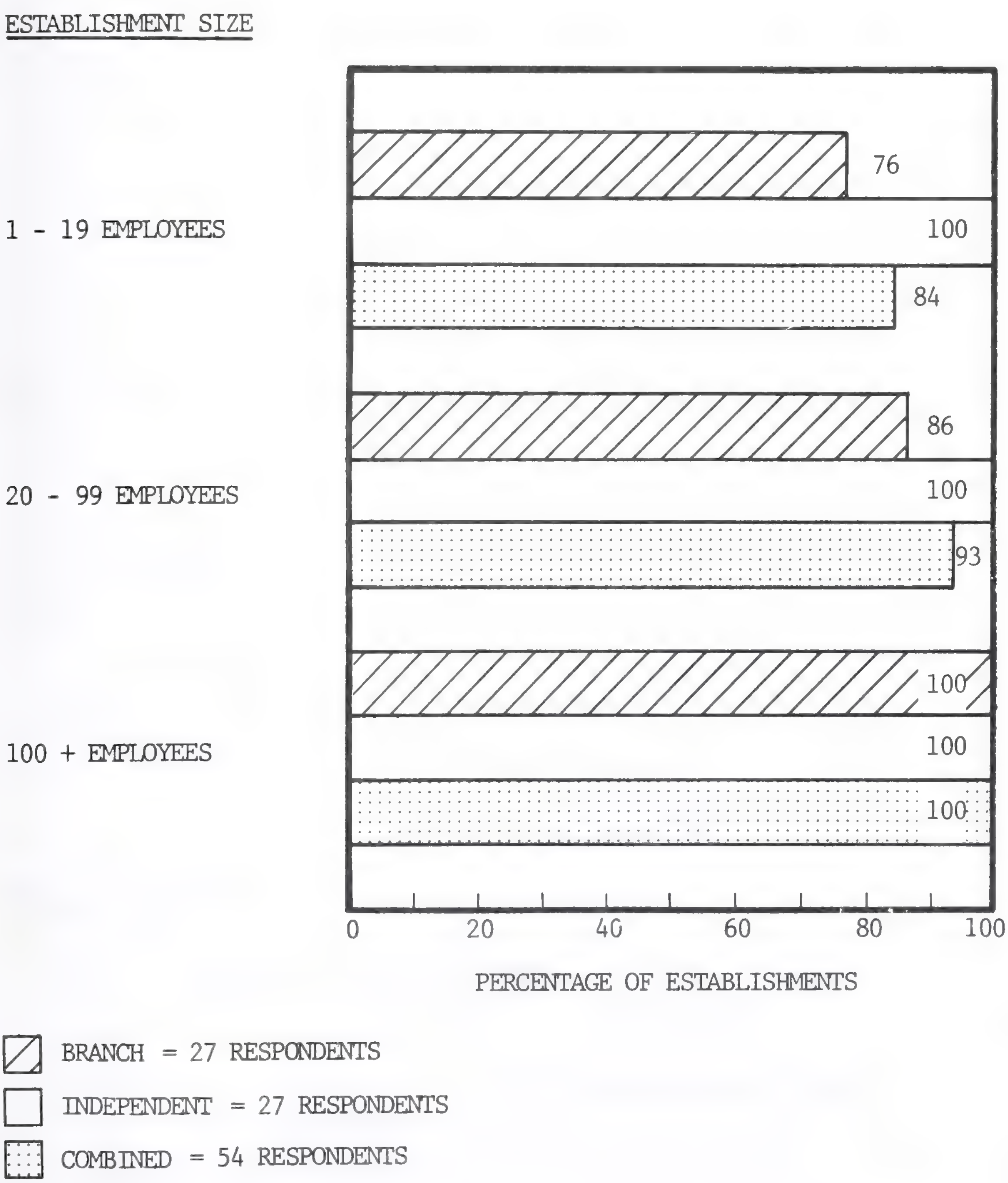


EXHIBIT V-134

BANKING: PENETRATION OF OFFICE AUTOMATION
(BY SIZE OF ESTABLISHMENT)

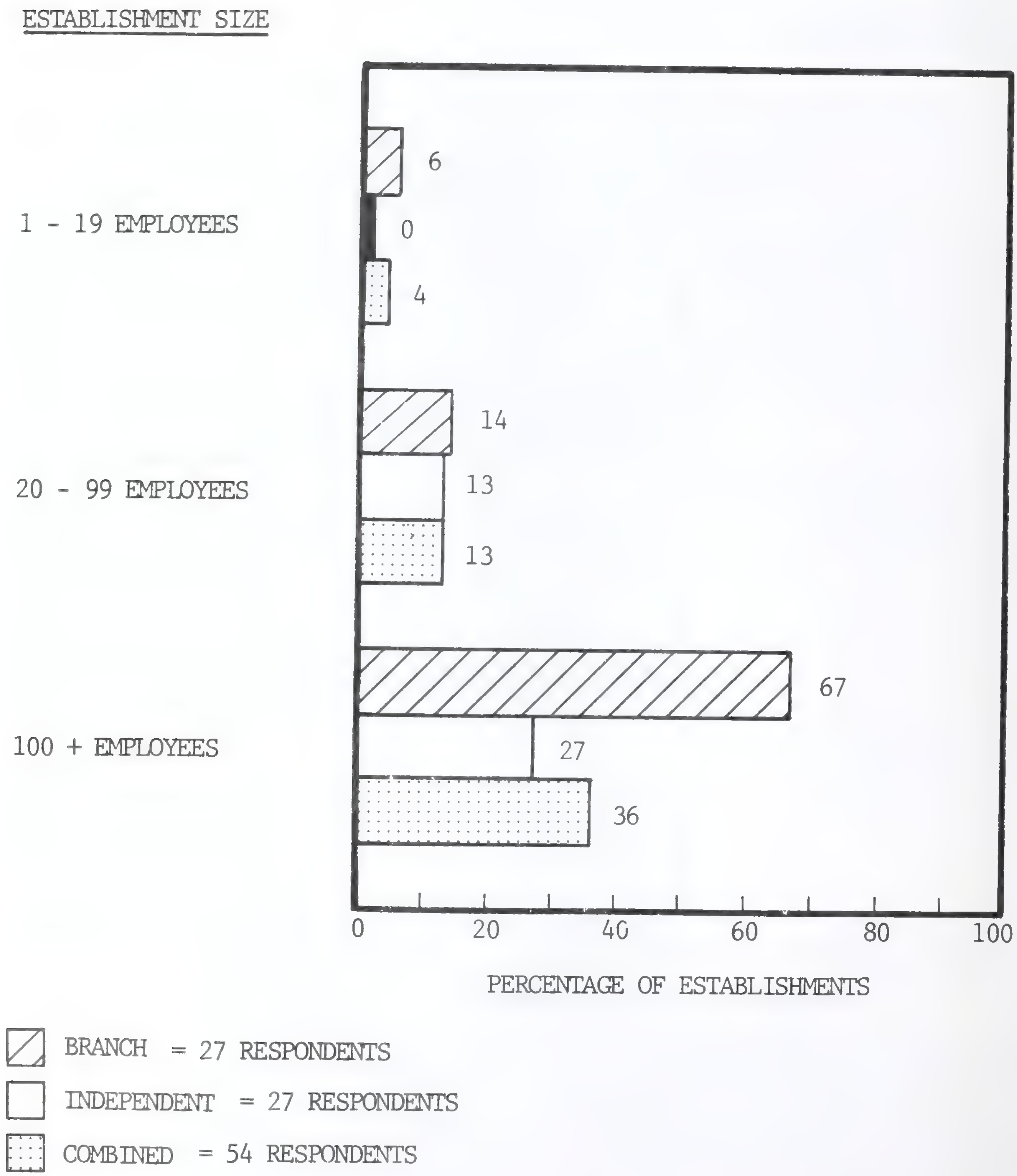


EXHIBIT V-135

BANKING: COMMUNICATIONS EQUIPMENT INSTALLED - BRANCHES AND INDEPENDENTS

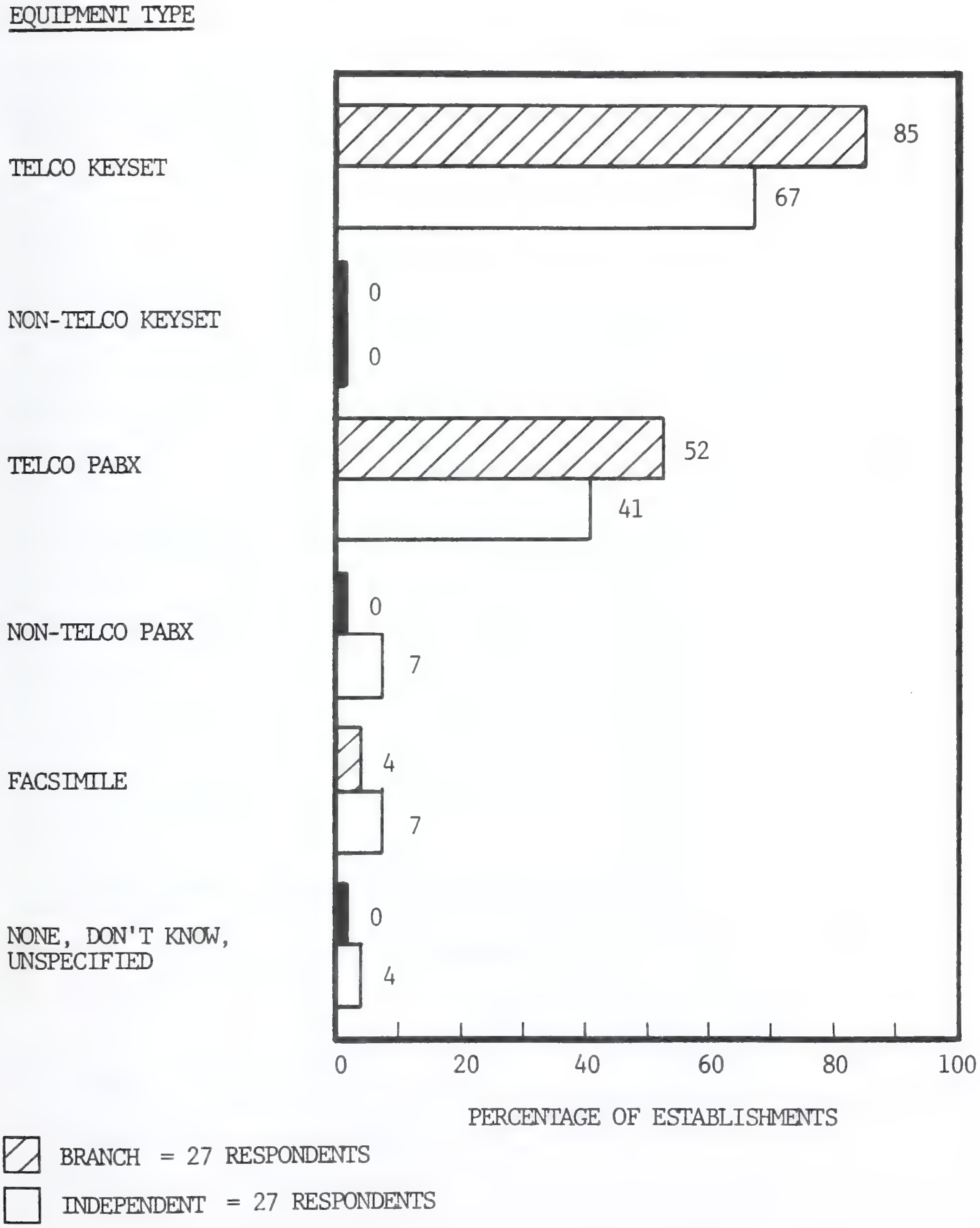


EXHIBIT V-136

BANKING: COMMUNICATIONS SERVICES INSTALLED - BRANCHES AND INDEPENDENTS

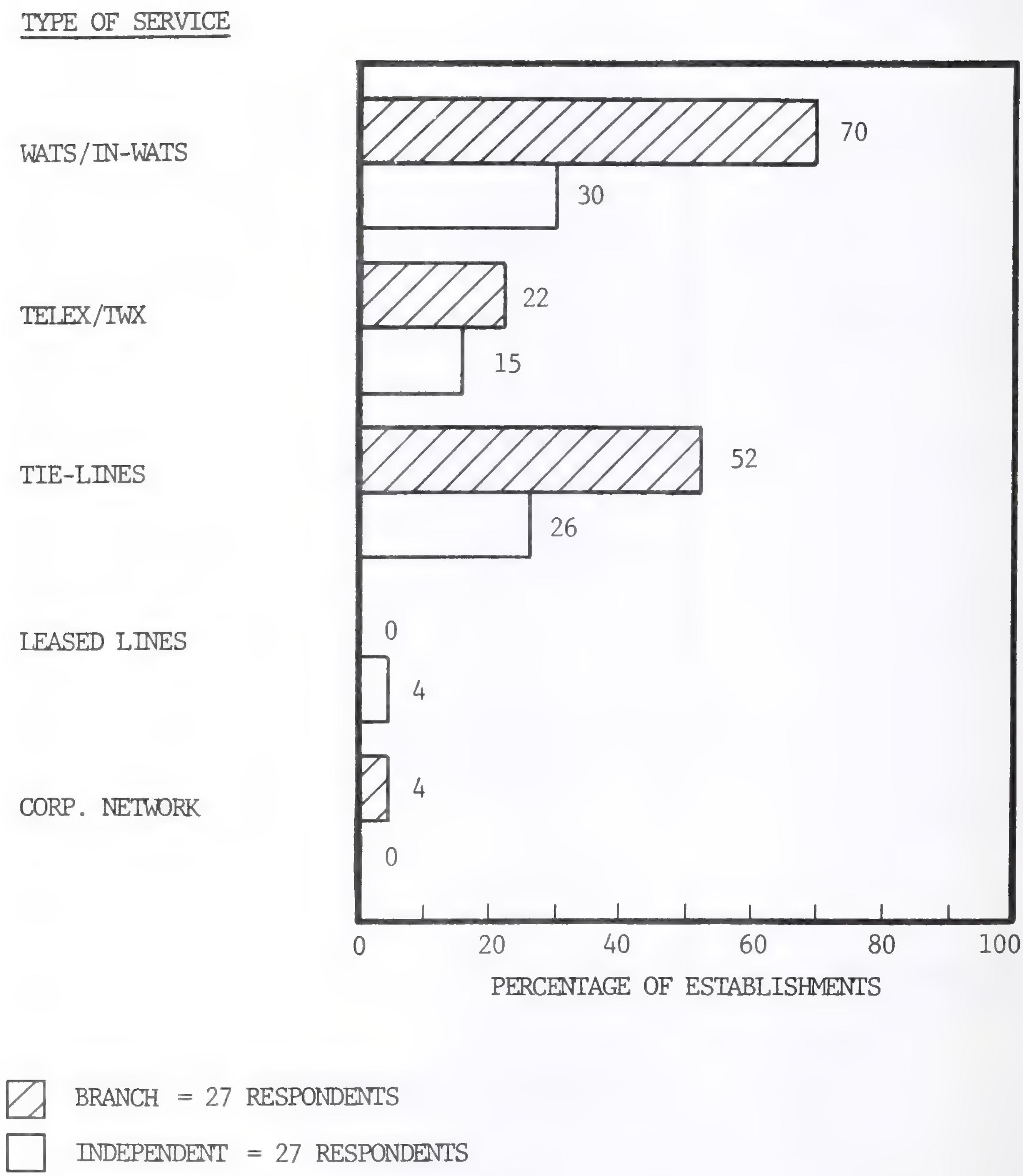


EXHIBIT V-137

BANKING: PENETRATION OF COMMUNICATIONS EQUIPMENT/SERVICES
(BY SIZE OF ESTABLISHMENT)

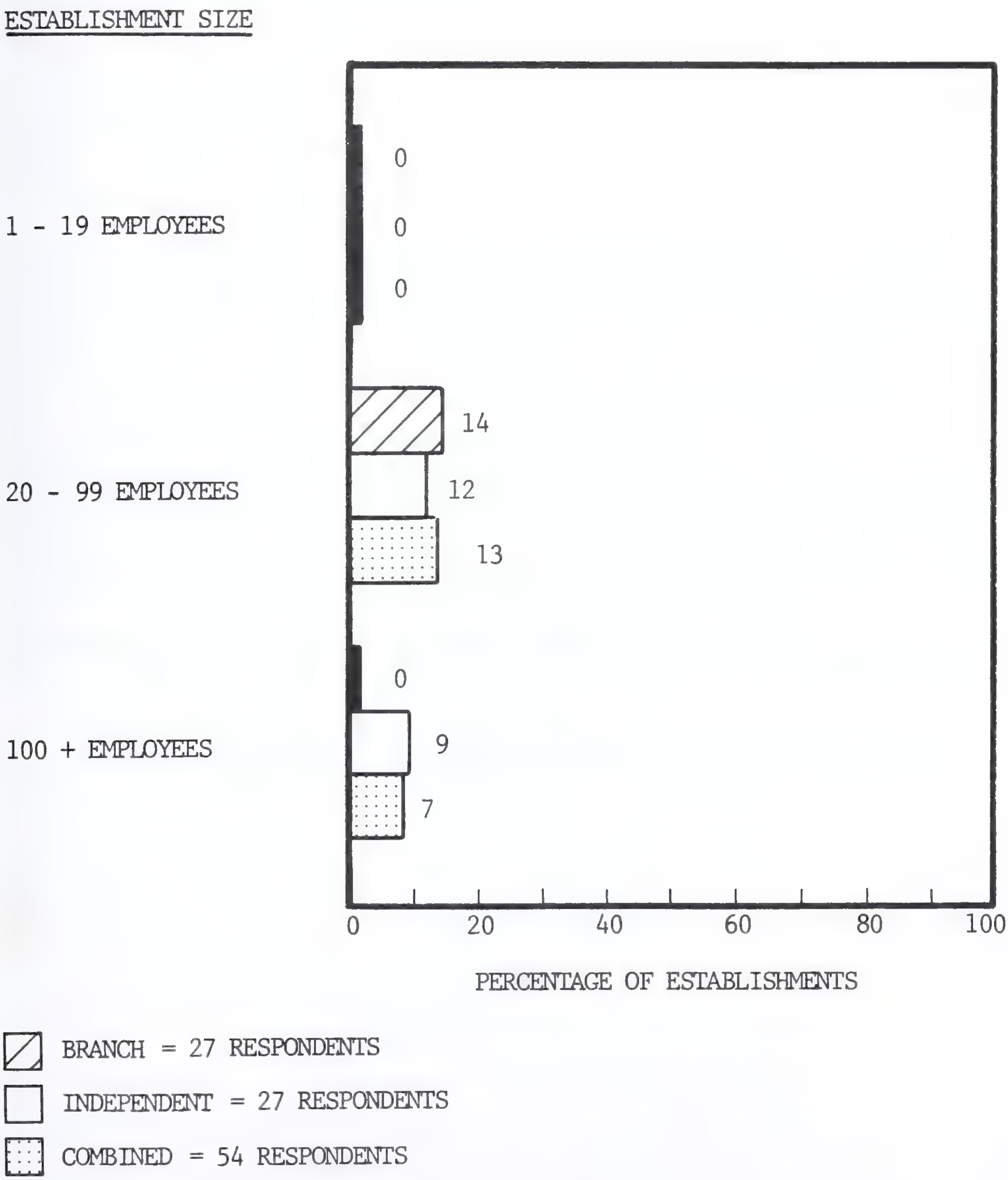


EXHIBIT V-138

BANKING: USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978-1983
(BY SIZE OF ESTABLISHMENT)

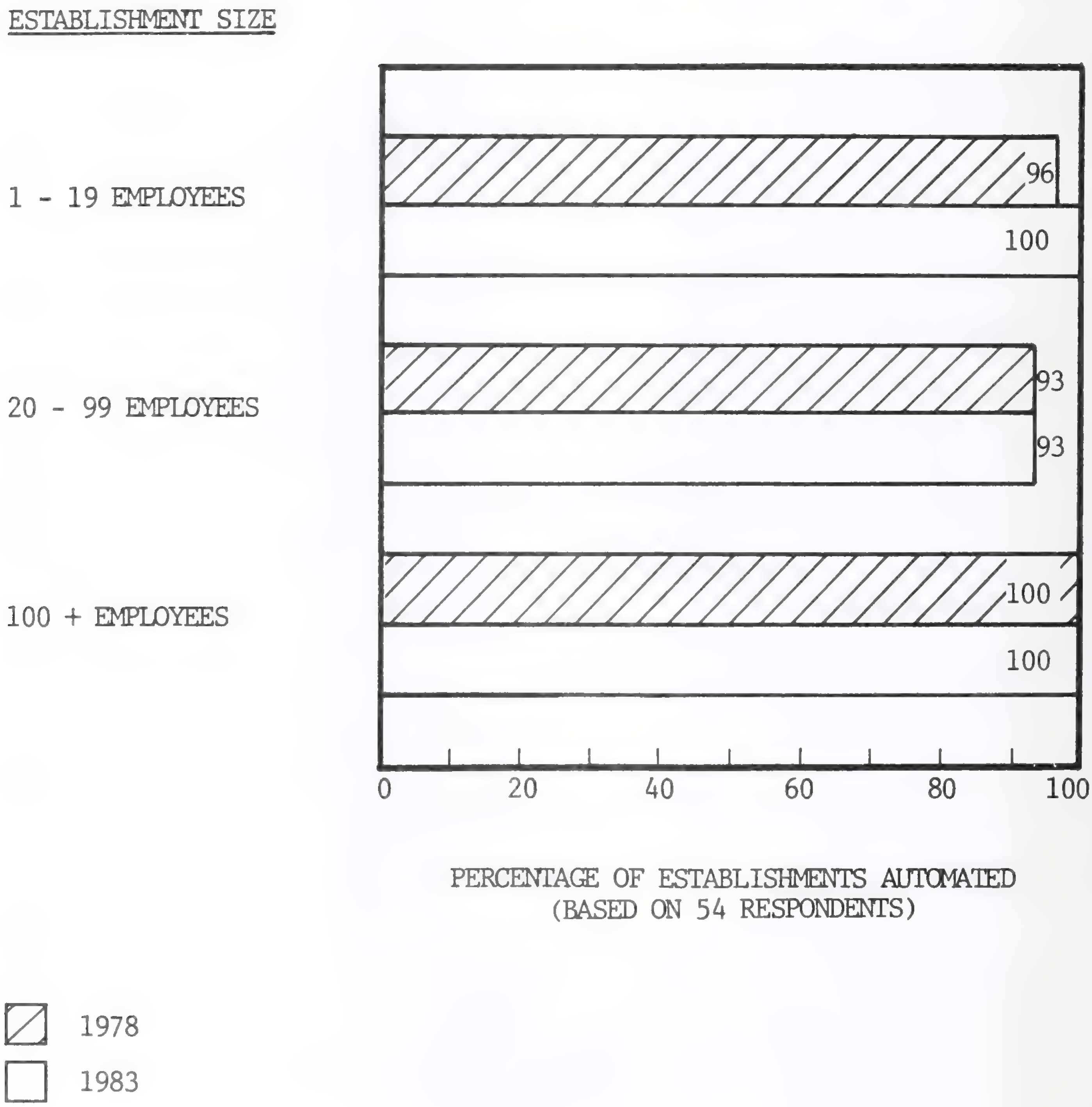


EXHIBIT V-139

BANKING: USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978-1983
(BY SIZE OF ESTABLISHMENT)

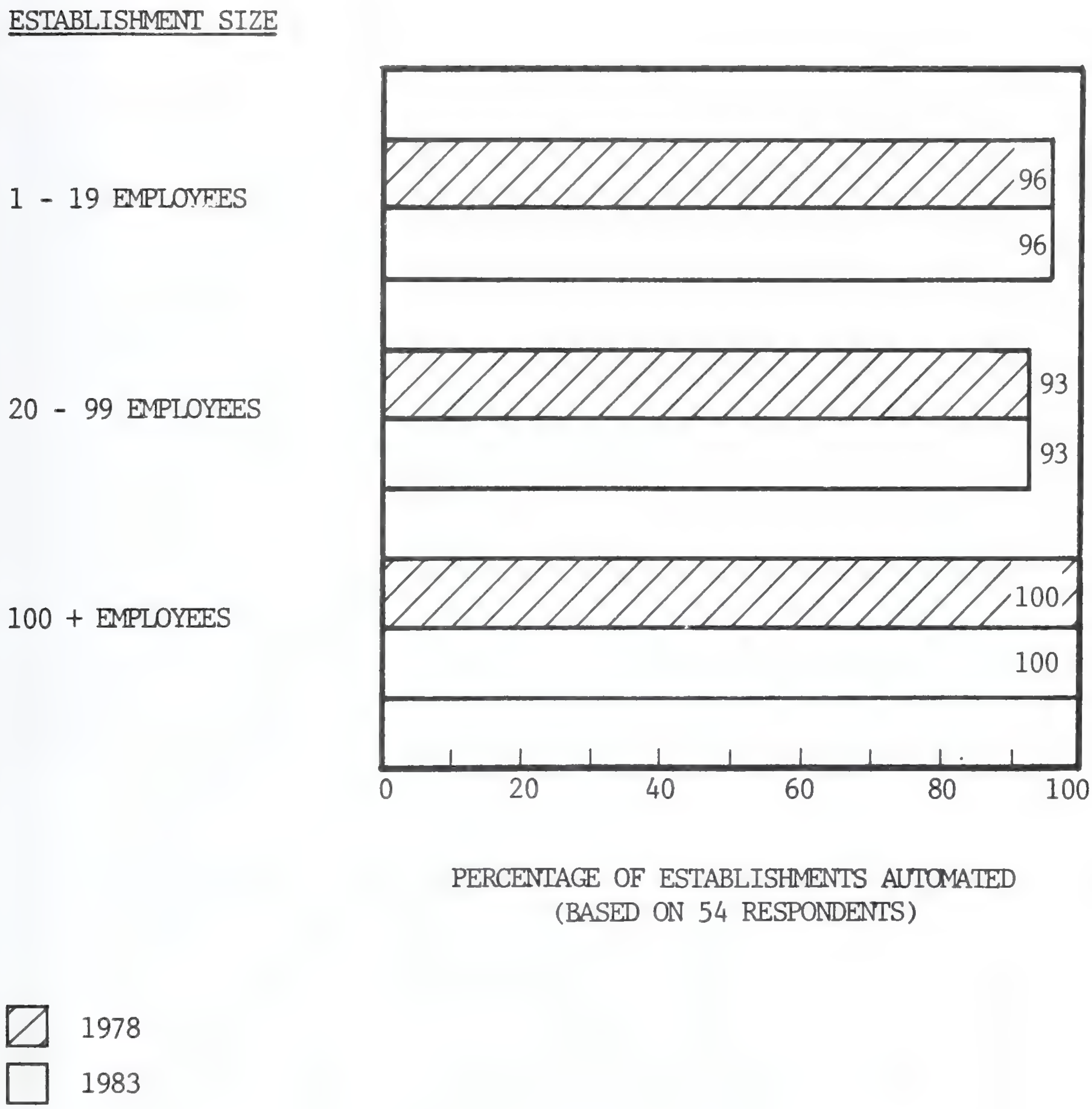


EXHIBIT V-140

BANKING: ADMINISTRATIVE/SALES APPLICATION ANALYSIS
(BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N = 27)			BRANCHES (N = 27)		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-
FINANCE & ACCOUNTING						
Payroll	4 %	93 %	4 %	-%	100 %	-
Billing	4	89	4	-	100	-
Accounts Receivable	4	93	4	-	100	-
Accounts Payable	7	89	7	-	100	-
General Ledger	19	78	11	26	74	-
Other Finance	-	4	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-141

BANKING: ADMINISTRATIVE/SALES APPLICATION ANALYSIS - BRANCHES

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 17)			20 - 99 EMPLOYEES (N = 7)			100 + EMPLOYEES (N = 3)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	-	100%	-	-	100%	-	-	100%	-
Billing	-	100	-	-	100	-	-	100	-
Accounts Receivable	-	100	-	-	100	-	-	100	-
Accounts Payable	-	100	-	-	100	-	-	100	-
General Ledger	35	65	-	14	86	-	-	100	-
Other Finance	-	-	-	-	-	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

N/A = Not Applicable

EXHIBIT V-142

BANKING: ADMINISTRATIVE/SALES APPLICATION ANALYSIS - INDEPENDENTS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 8)			20 - 99 EMPLOYEES (N = 8)			100 + EMPLOYEES (N = 11)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	13 %	87 %	13 %	- %	87 %	- %	- %	100 %	- %
Billing	13	87	13	-	87	-	9	91	9
Accounts Receivable	13	87	13	-	87	-	-	100	-
Accounts Payable	13	87	13	13	75	13	-	100	-
General Ledger	38	62	25	25	62	13	-	100	-
Other Finance	-	-	-	-	-	-	-	9	-

*On each question there was a varying percentage of 'No Responses.'' Therefore the sum of manual plus automated now may not equal 100%.

N/A = Not Applicable

EXHIBIT V-143

BANKING: INDUSTRY SPECIFIC APPLICATION ANALYSIS
(BY TYPE OF ESTABLISHMENT)

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N = 27)			BRANCHES (N = 27)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Demand Deposit	- %	100%	- %	-	93%	-
Savings Deposit	7	93	7	-	93	-
Consumer Loans	11	78	11	-	93	-
Commercial Loans	15	67	15	-	93	-
Proof of Deposit	15	82	4	-	93	-
Customer Information Systems	4	85	-	-	93	-
Other	-	11	-	-	4	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-144

BANKING: INDUSTRY SPECIFIC APPLICATIONS ANALYSIS - BRANCHES

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 17)			20 - 99 EMPLOYEES (N = 7)			100 + EMPLOYEES (N = 3)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Demand Deposit	-	94%	-	-	86%	-	-	100%	-
Savings Deposit	-	94	-	-	86	-	-	100	-
Consumer Loans	-	94	-	-	86	-	-	100	-
Commercial Loans	-	94	-	-	86	-	-	100	-
Proof of Deposit	-	94	-	-	86	-	-	100	-
Customer Info. Systems	-	94	-	-	86	-	-	100	-
Other	-	-	-	-	14	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-145

BANKING: INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 8)			20 - 99 EMPLOYEES (N = 8)			100 + EMPLOYEES (N = 11)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Demand Deposit	- %	100%	-%	- %	100%	- %	- %	100%	- %
Savings Deposit	25	75	25	-	100	-	-	100	-
Consumer Loans	25	50	13	-	88	-	9	91	-
Commercial Loans	25	50	25	13	63	13	9	82	9
Proof of Deposit	50	38	13	-	100	-	-	100	-
Customer Info. Systems	13	50	-	-	100	-	-	100	-
Other	-	13	-	-	13	-	-	9	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-146

BANKING: EDP, OFFICE, AND COMMUNICATION NEEDS
(BY SIZE OF ESTABLISHMENT)

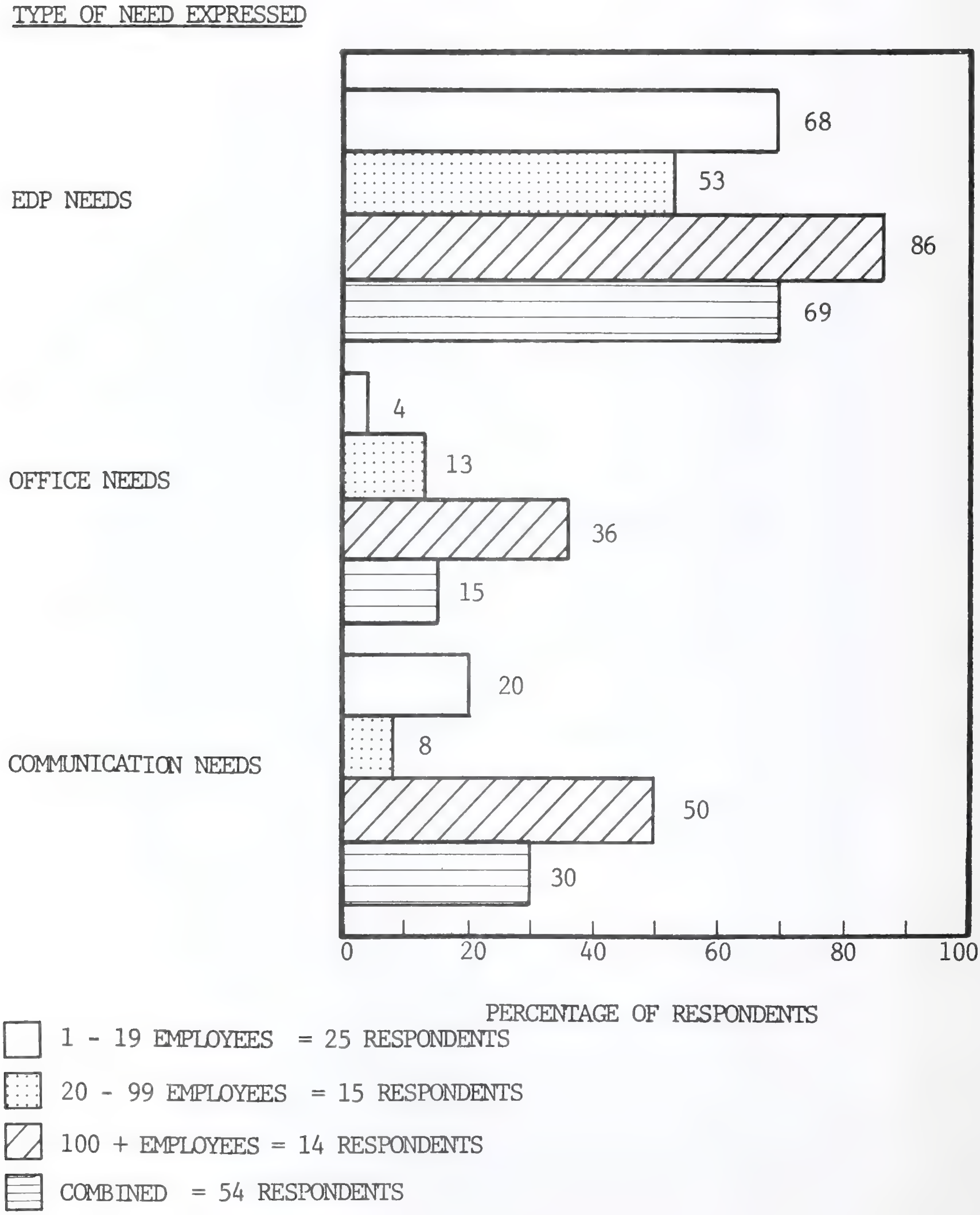


EXHIBIT V-147

TOTAL CURRENT EXPENDITURES OF THE FINANCE & BANKING SECTOR

EXPENDITURE CLASSIFICATION	1 - 19 EMPLOYEES	20 - 99 EMPLOYEES	100 - 499 EMPLOYEES	TOTAL
EDP EQUIPMENT SERVICES, AND SUPPLIES	$166.5M	$ 291.6M	$186.9M	$ 645M
OFFICE EQUIPMENT	$160.8M	$ 253.6M	$151.6M	$ 566M
COMMUNICATIONS EQUIPMENT AND SERVICES	$423.9M	$ 668.4M	$399.7M	$1,492M
TOTAL	$751.2M	$1,213.6M	$738.2M	$2,703M

EXHIBIT V-148

AVERAGE CURRENT EXPENDITURES
OF THE FINANCE AND BANKING SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$ 414	N/A
OFFICE EQUIPMENT	363	N/A
COMMUNICATIONS EQUIPMENT & SERVICES	957	N/A

N/A = NOT APPLICABLE

I. INSURANCE

I. INSURANCE

1. INDUSTRY CHARACTERISTICS

- The insurance industry sector exhibits one of the highest levels of use and desire for more automated equipment and services. Penetration of computer equipment and computer services is near the top of all industry sectors studied, and the use of word processing equipment in this industry is above the average for all small establishments. However, there was no reported use of interconnect equipment. Insurance carriers expressed the highest percentage of needs for computer equipment and services while office and communications needs have been expressed by one-third or more of all respondents.

- The insurance sector is comprised almost entirely of small establishments (see Exhibit V-149). Almost 90,000 establishments, more than 99 percent of all establishments in the insurance sector, have less than 500 employees. Together, all small establishments in the insurance sector employ one million people. The industries contained in the insurance sector are:

  - Insurance carriers (SIC 63).

  - Insurance agencies and brokers (SIC 64).

- Small establishments in this sector spend $906 million annually on equipment and services, including:

  - EDP equipment.

  - EDP services.

  - Office equipment.

- Communications equipment.

- Communications services.

- Supplies.

- The industry sub-sector which is the focus of this section is the insurance carrier industry (SIC 63). The insurance carriers group follows the general trends found in the insurance sector, except that 89 percent of the insurance industry establishments have less than 20 employees, where only 72 percent of the insurance carriers do:

  - Over 300 enterprises have more than 500 employees, including all of the Fortune 50 Life Insurance companies. All of these firms have small establishment branch locations which qualify for inclusion in this report.

- There are no unusual regional concentrations in the insurance carrier industry, as shown in Exhibit V-150.

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

- Slightly less than half of all respondent establishments have their own EDP equipment installed. However, there are no significant differences between branches and independent locations (see Exhibit V-151).

- About 60 percent of independent respondents, and about 20 percent of small and medium-size branches report that they use computer services:

  - No respondents from branches of large partnerships with more than 100 employees stated that they use or would consider using computer services. A common reason from branch respondents for not using computer services was access to a corporate owned computer (see Exhibit V-152).

- Two-thirds of large and small respondents from independent enterprises were using computer services and a few more would consider using them (see Exhibit V-153).

- EDP penetration among insurance carriers is about 80 percent overall (see Exhibit V-154):

  - Sixty-three percent of respondents from establishments with less than 20 employees and 100 percent of respondents from establishments with more than 100 employees used EDP equipment or services.

- There is fairly high acceptance of automated office equipment among insurance carriers. Almost half of respondents from establishments with more than 100 employees were using word processing equipment (see Exhibit V-155):

  - Smaller sizes of establishments do not show the same level of penetration, although they did express further needs for these improvements.

- Over eighty percent of all respondents used on-premises switching communication equipment, all of it supplied by the local telephone company (keyset or PABX - see Exhibit V-156).

- There are some differences in usage of communications services between branches and independents (see Exhibit V-157):

  - For example, 50 percent of independent locations used WATS lines, but only 32 percent of respondents from branch establishments had WATS lines installed.

  - This ratio is reversed for the use of Telex/TWX, where it is 16 percent of branches, 9 percent of independents.

- There is no reported usage of interconnect equipment by insurance carriers, but 22 percent of respondents cited needs which could be met with interconnect equipment.

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-158 and V-159 show that respondents use EDP somewhat more for financial/administrative functions than for industry specific functions.

  - Sixty-six percent of all establishments used EDP for financial/administrative functions. Only 46 percent of all respondents cited EDP applications for industry specific functions.

  - By 1983, 85 percent of respondents from establishments with 20-99 employees will be using EDP for financial/administrative functions. Few respondents had plans of increasing usage of EDP for industry specific applications, and no respondents would newly join the automated group.

- There are no essential differences between branches and independents in their use of EDP for administrative application, nor between the three size categories of branches (see Exhibits V-160 and V-161).

- There are some differences in automation of financial/administrative applications between the three sizes of independent establishments.

- Independent establishments with 20 to 99 employees show greater usage of EDP for administrative applications than do either larger or smaller independent establishments (see Exhibit V-162).

- Usage of EDP for industry specific applications is greatest for branch establishments for policy issuance and renewals and for claims processing.

  - Otherwise, independent establishments use EDP evenly for all the industry specific applications, and about equally to their branch equivalents (see Exhibit V-163).

- There are few notable differences in applications automated by any of the size classes of branches, but as usual, larger independents have more applications automated than do smaller independents (see Exhibits V-164 and V-165).

- There are few plans to automate any additional applications in the next five years.

4. EDP, OFFICE AND COMMUNICATION NEEDS

- In the insurance carrier industry, almost all respondent establishments stated further needs both for computer equipment and computer services (see Exhibit V-166). About one-half have further office needs, and about one-fourth have communications needs:

  - The highest percentage of needs for computer equipment or services was expressed by the insurance carrier industry. Eighty-two percent of respondents used EDP; 85 percent of respondents expressed further EDP needs.

  - The larger the establishment size, the more likely it is to express additional needs.

- EDP needs definitely included multi-function capabilities. Tailoring of policy provisions and premium rates to specific client needs makes insurance a heavy user of all types of information processing. Respondents expressed such desires as:

  - "System to issue and write policies."

  - "More memory."

  - "Automation for writing proposals."

  - "Word processing software package."

- Office needs were expressed by over half of all establishments with more than 20 employees. Sixty-seven percent of respondents from establishments with more than 100 employees expressed office needs. Many needs expressed were specifically for additional word processing equipment, even though the industry is already a heavy user of word processing.

- Communications needs were expressed by more than 30 percent of establishments with more than 20 employees, primarily related to data communications. A desire to reduce and control communications costs is a strong factor. Comments included:

  - "Control of communications expenditures."

  - "Send data over regular phone lines."

  - "Get private line for data processing."

5. EXPENDITURES

- Expenditures for EDP, office and communications equipment and services were over $906 million annually in the insurance sector, as shown in Exhibits

V-167 and V-168. Over 69 percent of expenditures for automated equipment, services, and supplies were from establishments with less than 100 employees:

- Annual expenditures for EDP equipment, services and supplies were $216 million or $217 per employee.

- Annual expenditures for office equipment were $190 million or $217 per employee.

- Annual expenditures for communications equipment and services were $500 million or $502 per employee.

EXHIBIT V-149

STRUCTURE OF INSURANCE & INSURANCE CARRIERS INDUSTRIES
(BY SIZE OF ESTABLISHMENT, 1975)

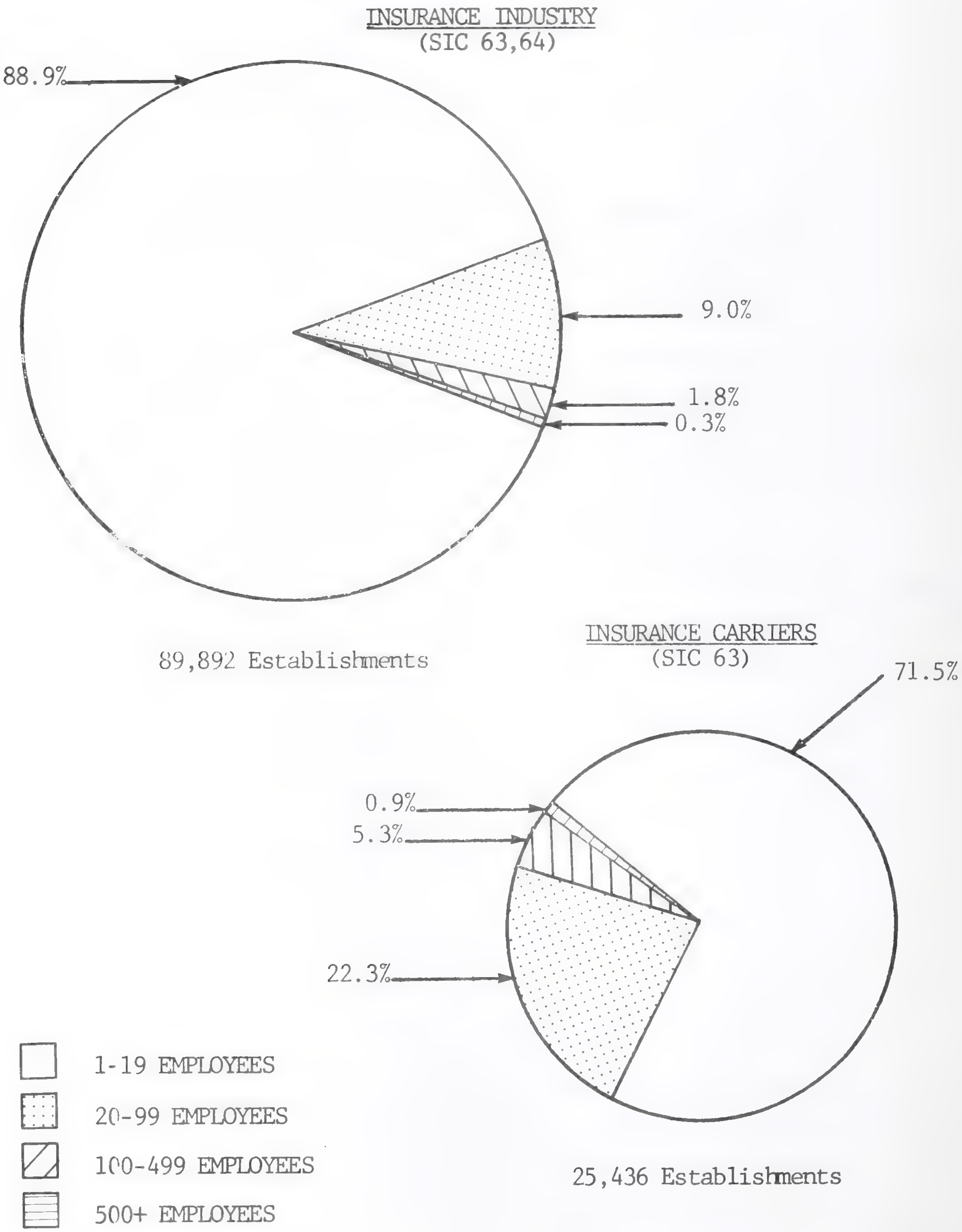


EXHIBIT V-150

DISTRIBUTION OF INSURANCE CARRIER ESTABLISHMENTS
(BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	501	2.0%	MT	110	0.4%
AK	45	0.2	NE	264	1.0
AZ	291	1.2	NV	66	0.3
AR	196	0.8	NH	75	0.3
CA	2175	8.6	NJ	701	2.8
CO	303	1.2	NM	98	0.4
CT	305	1.2	NY	1950	7.7
DE	62	0.2	NC	668	2.7
DC	144	0.6	ND	111	0.4
FL	1120	4.4	OH	1197	4.7
GA	683	2.7	OK	277	1.1
HI	92	0.4	OR	301	1.2
ID	120	0.5	PA	1451	5.8
IL	1421	5.6	RI	104	0.4
IN	679	2.7	SC	323	1.3
IA	412	1.6	SD	112	0.4
KS	289	1.1	TN	532	2.1
KY	387	1.5	TX	1726	6.8
LA	489	1.9	UT	128	0.5
ME	113	0.4	VT	56	0.2
MD	372	1.5	VA	580	2.3
MA	537	2.1	WA	450	1.8
MI	928	3.7	WV	184	0.7
MN	531	2.1	WI	592	2.3
MS	237	0.9	WY	42	0.2
MO	677	2.7			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				25,207	100.0%

EXHIBIT V-151

INSURANCE CARRIERS: EDP EQUIPMENT INSTALLED

(BY TYPE AND SIZE OF ESTABLISHMENT)

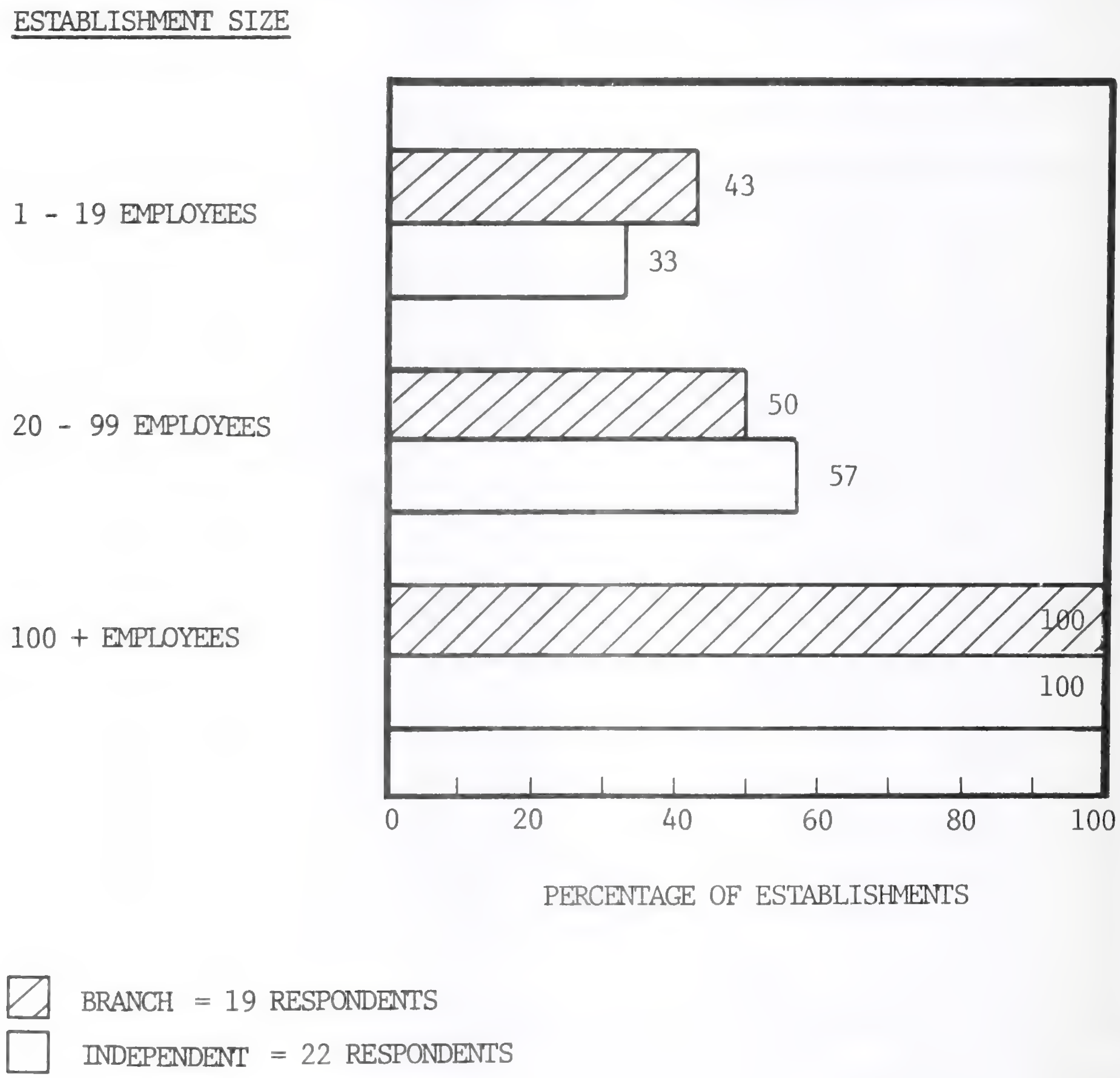


EXHIBIT V-152

INSURANCE CARRIERS:
USE OF COMPUTER SERVICES - BRANCHES

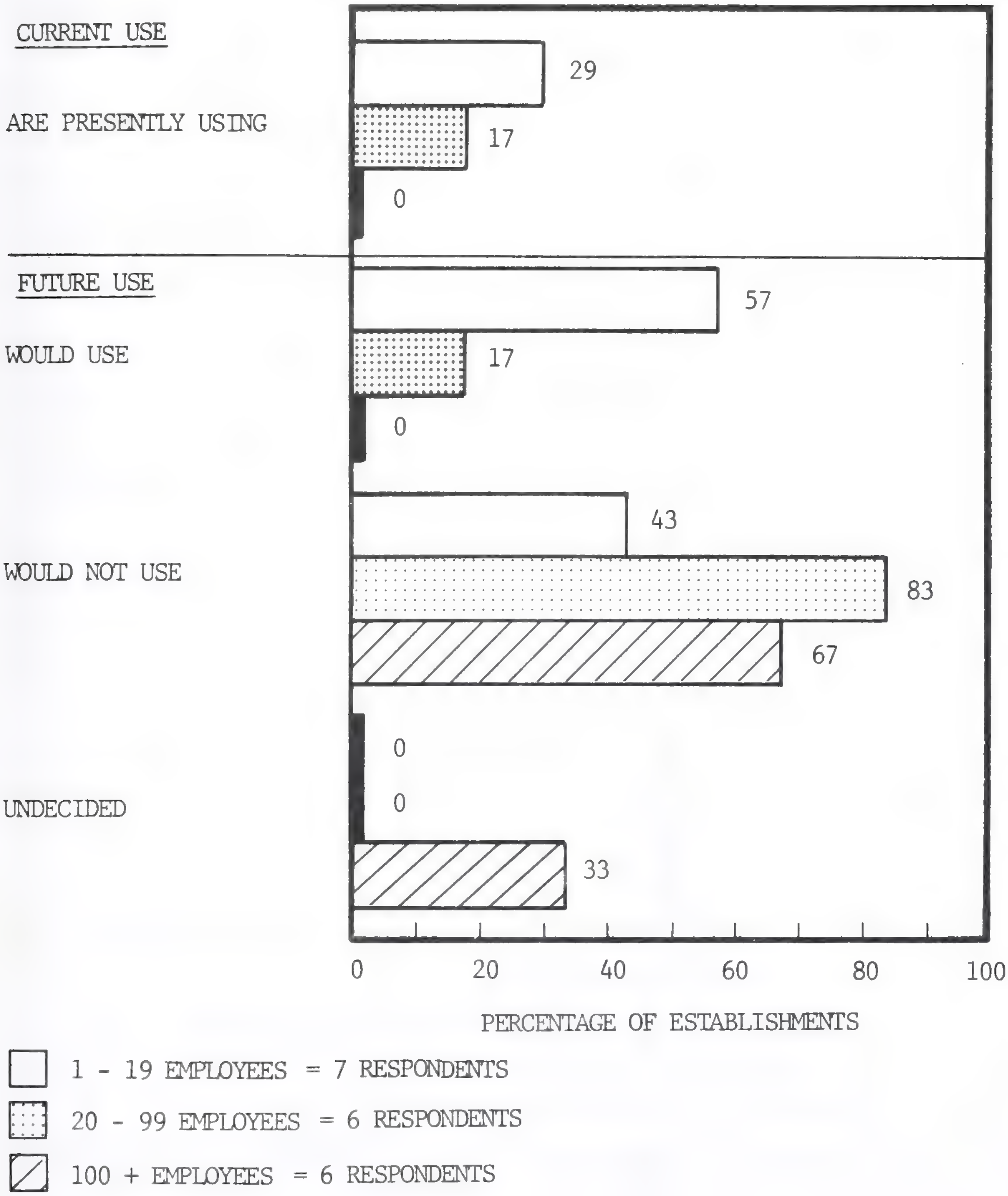


EXHIBIT V-153

INSURANCE CARRIERS:
USE OF COMPUTER SERVICES - INDEPENDENTS

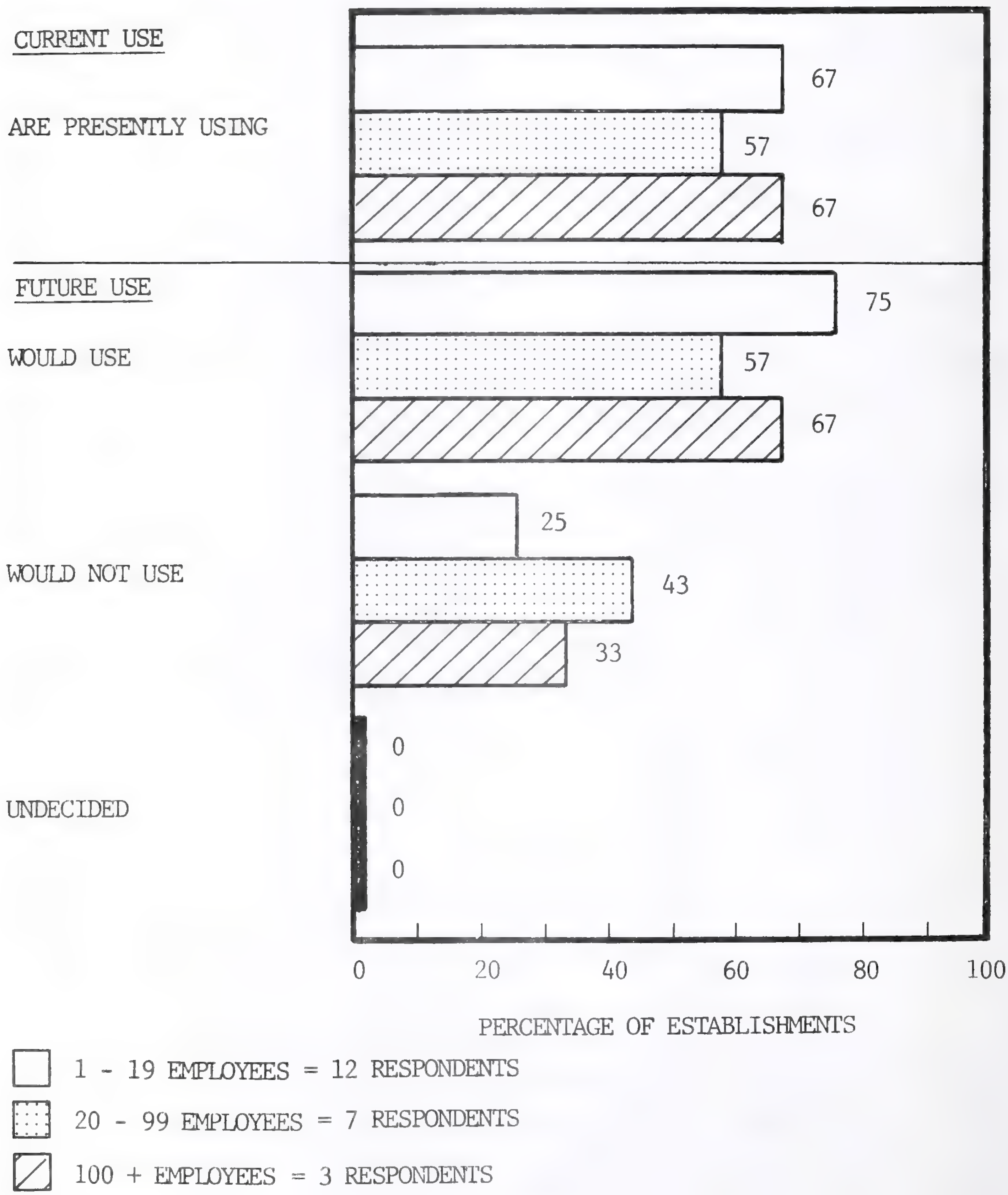


EXHIBIT V-154

INSURANCE CARRIERS:
PERCENTAGE OF USERS OF COMPUTER EQUIPMENT OR SERVICES OR BOTH
(BY SIZE OF ESTABLISHMENT)

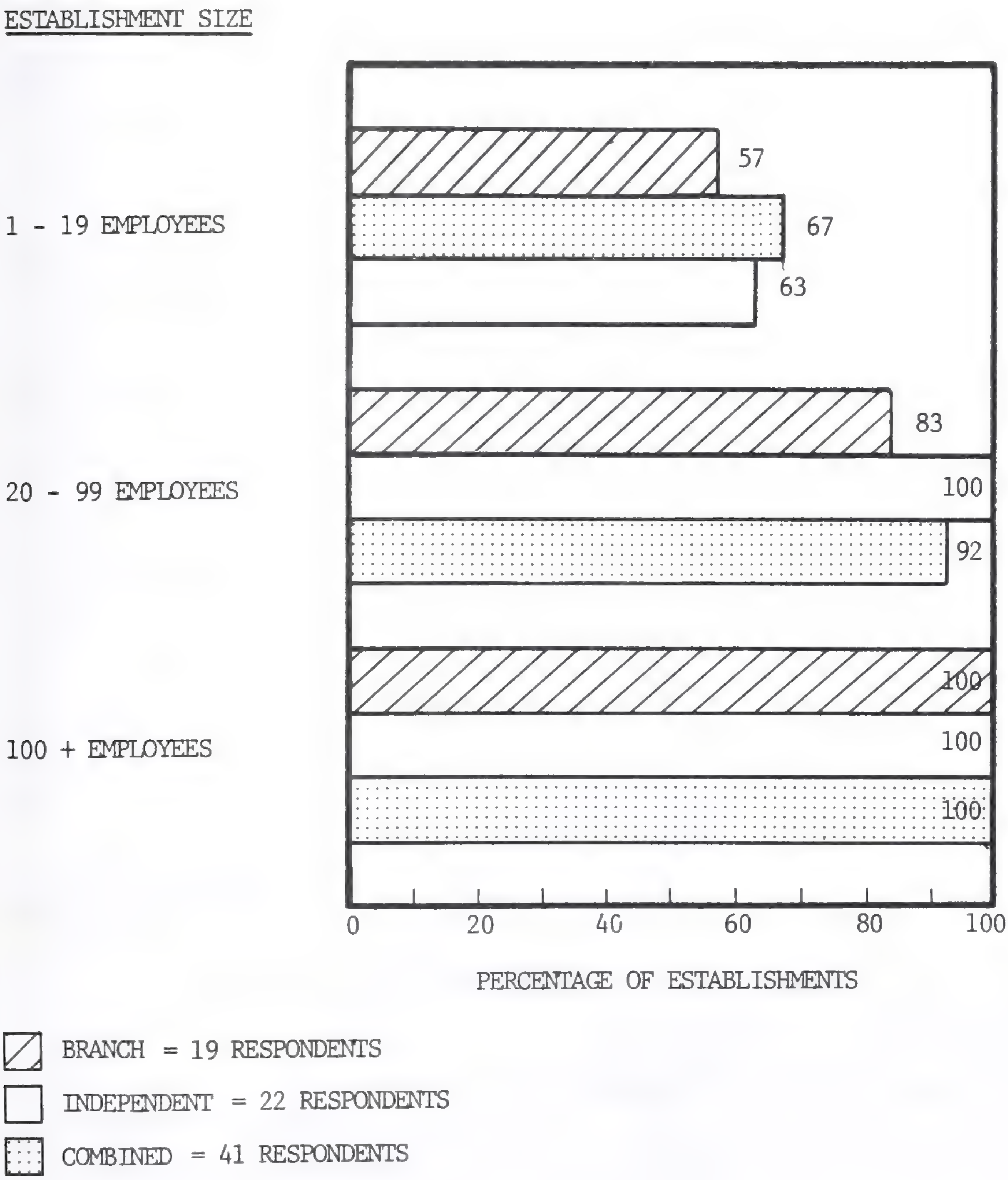


EXHIBIT V-155

INSURANCE CARRIERS:
USERS OF OFFICE AUTOMATION
(BY SIZE OF ESTABLISHMENT)

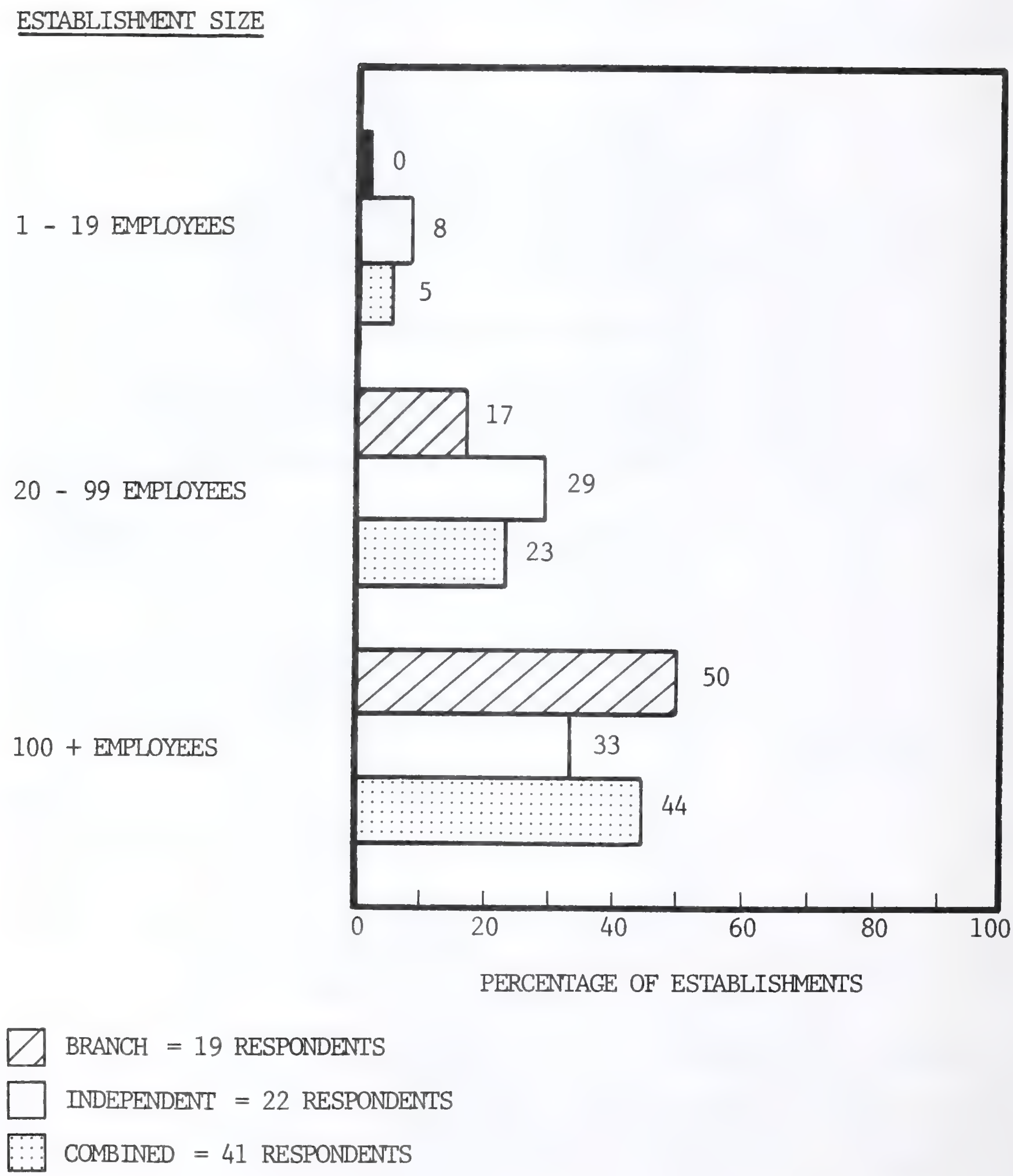


EXHIBIT V-156

INSURANCE CARRIERS:
COMMUNICATIONS EQUIPMENT INSTALLED -
BRANCHES AND INDEPENDENTS

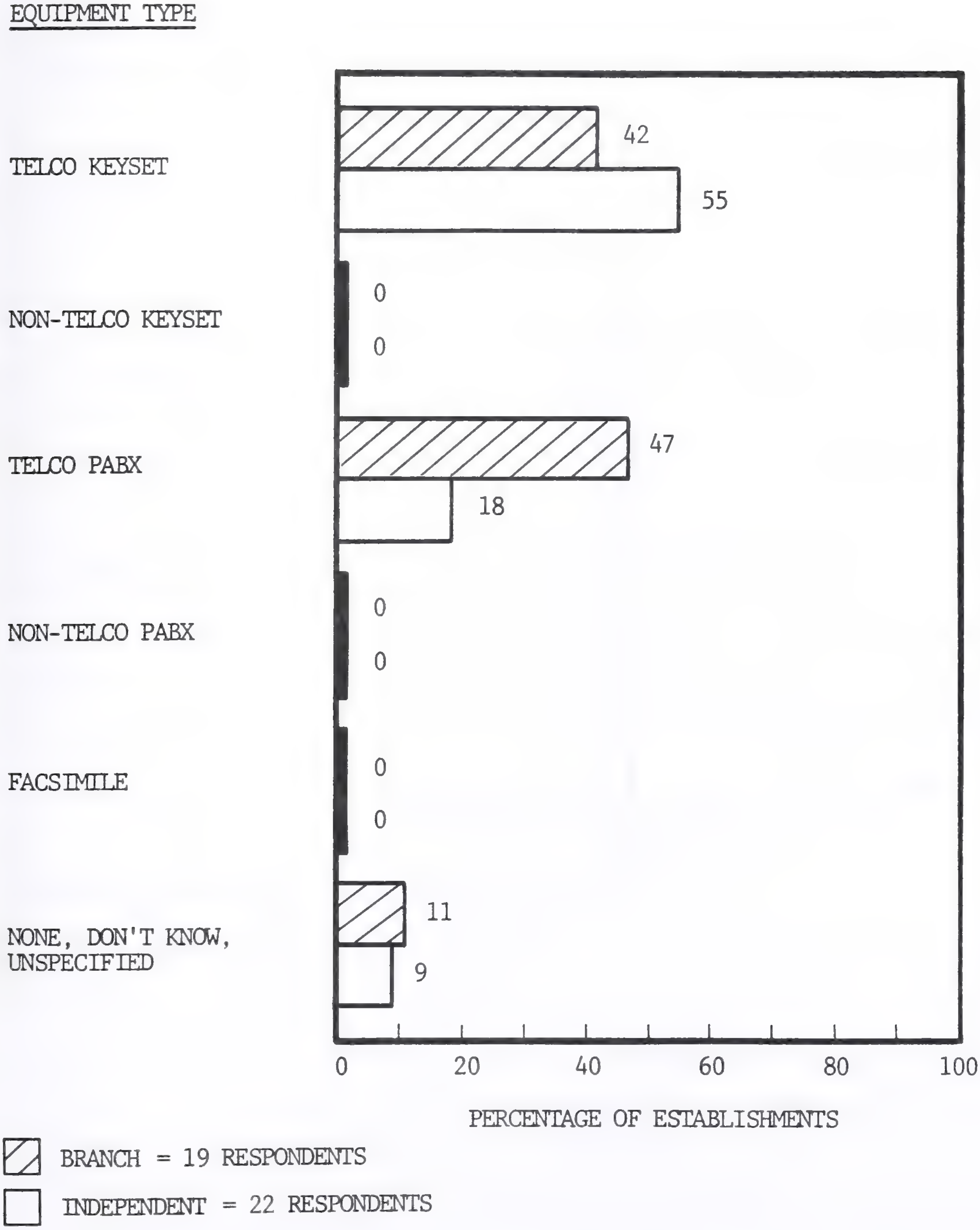


EXHIBIT V-157

INSURANCE CARRIERS:
COMMUNICATIONS SERVICES INSTALLED -
BRANCHES AND INDEPENDENTS

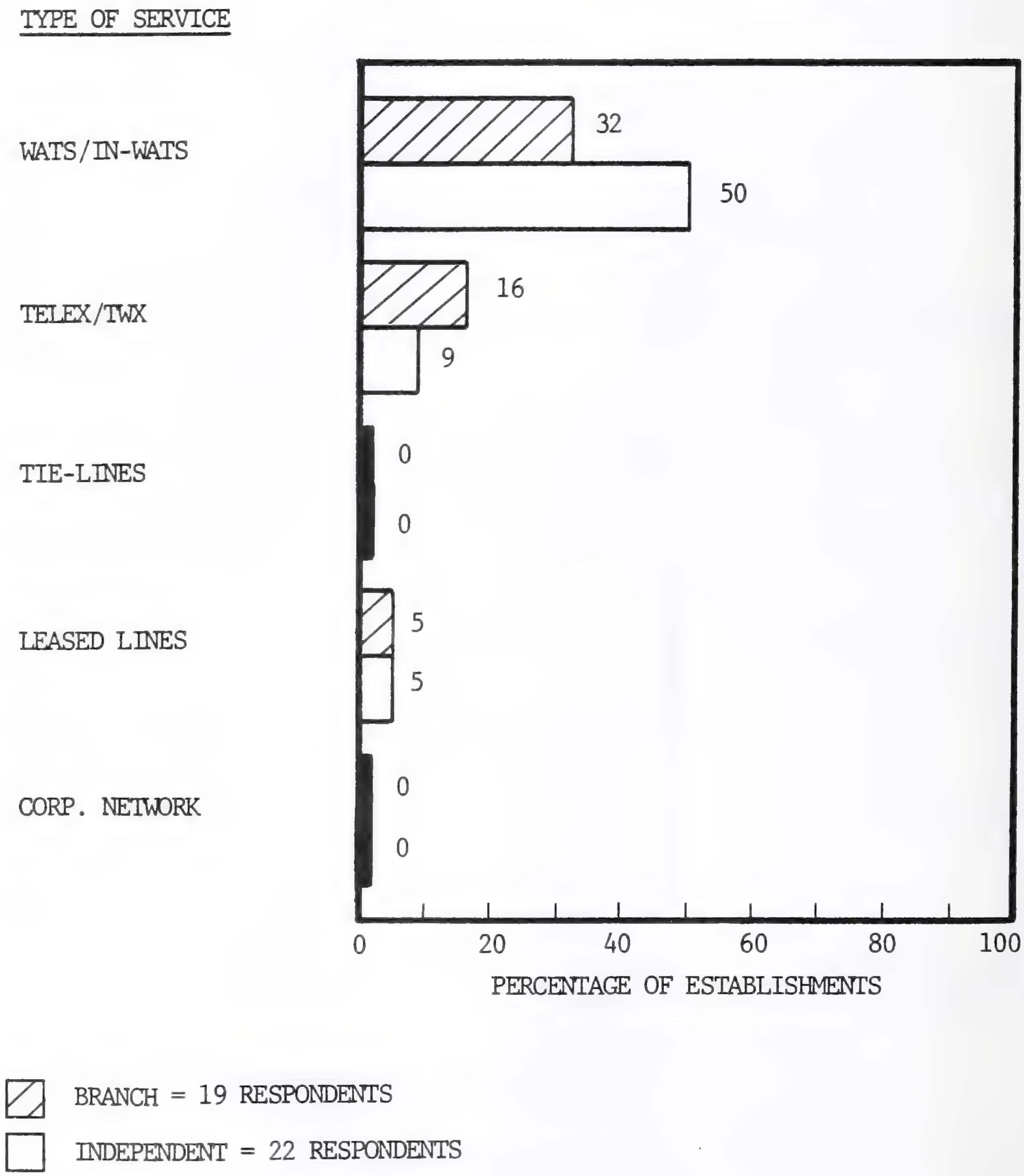
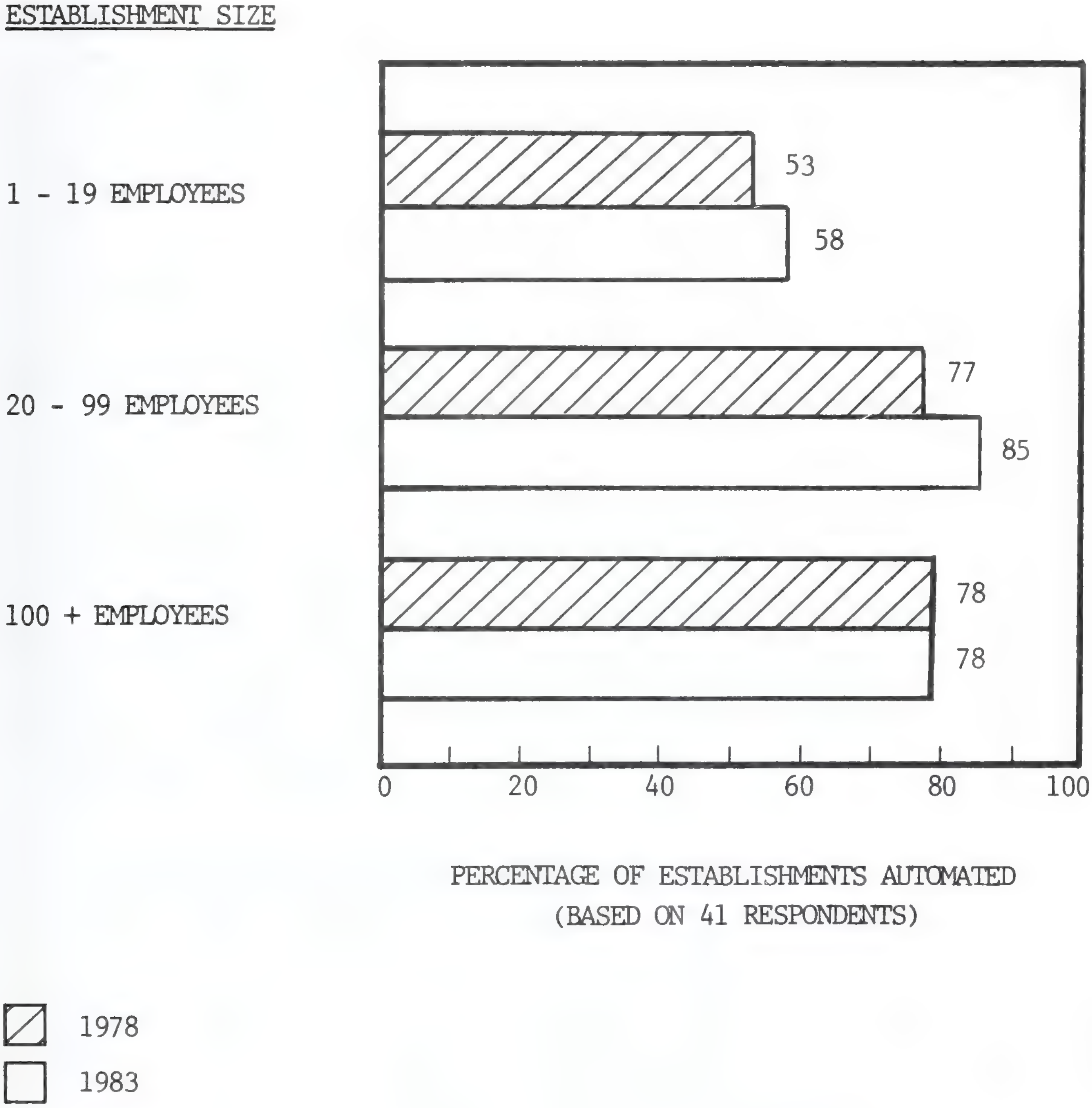


EXHIBIT V-158

INSURANCE CARRIERS:
USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978/1983
(BY SIZE OF ESTABLISHMENT)



PERCENTAGE OF ESTABLISHMENTS AUTOMATED
(BASED ON 41 RESPONDENTS)

EXHIBIT V-159

INSURANCE CARRIERS:
USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978/1983
(BY SIZE OF ESTABLISHMENT)

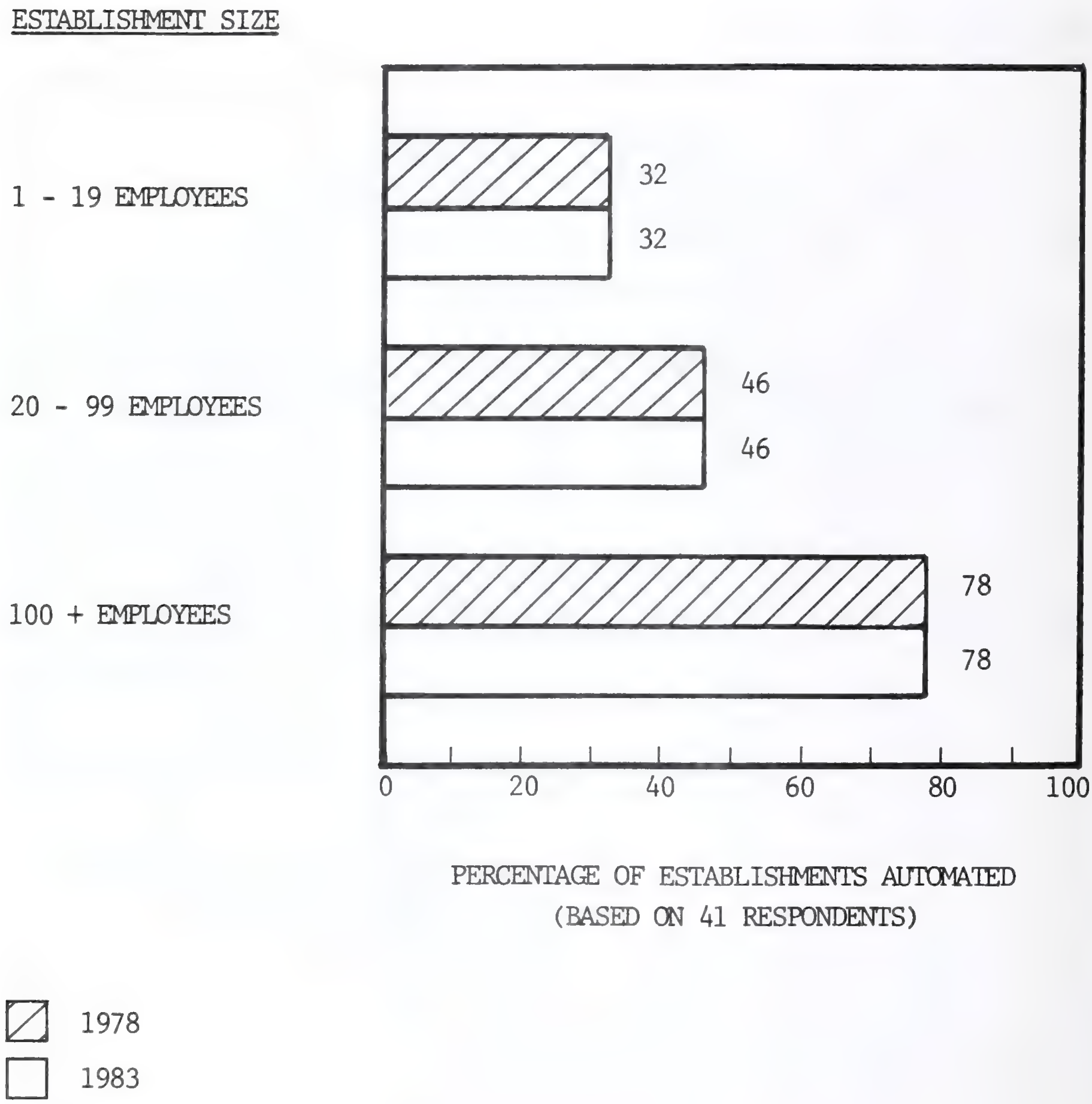


EXHIBIT V-160

INSURANCE CARRIERS:
ADMINISTRATIVE/SALES APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=22)			BRANCHES (N=19)		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Sales Analysis	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-
FINANCE & ACCOUNTING						
Payroll	41%	50%	5%	21%	53%	-
Billing	32	59	-	11	58	-
Accounts Receivable	23	64	-	21	53	5
Accounts Payable	36	45	-	21	47	5
General Ledger	36	55	-	16	53	5
Other Finance	-	5	-	-	5	-

*On each question there was a varying percentage of "No Responses."
Therefore the sum of manual plus automated now may not equal 100%.
N.A. = DATA NOT AVAILABLE

EXHIBIT V-161

INSURANCE CARRIERS:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS - BRANCHES

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=7)			20 - 99 EMPLOYEES (N=6)			100+ EMPLOYEES (N=6)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Sales Analysis	-	-	-	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	43%	43%	-	17%	50%	-	-	67%	-
Billing	29	57	-	-	50	-	-	67	-
Accounts Receivable	43	43	-	17	50	17	-	67	-
Accounts Payable	43	43	-	17	33	17	-	67	-
General Ledger	29	57	-	17	33	17	-	67	-
Other Finance	-	14	-	-	-	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

N.A. = DATA NOT AVAILABLE

EXHIBIT V-162

INSURANCE CARRIERS:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS - INDEPENDENTS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=12)			20 - 99 EMPLOYEES (N=7)			100+ EMPLOYEES (N=3)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Sales Analysis	-	-	-	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	58%	33%	8%	14%	86%	-	33%	33%	-
Billing	42	50	-	29	71	-	-	67	-
Accounts Receivable	42	50	-	-	100	-	-	33	-
Accounts Payable	42	33	-	29	71	-	-	33	-
General Ledger	42	33	-	29	71	-	33	33	-
Other Finance	-	-	-	-	-	-	-	-	-

*On each question there was a varying percentage of 'No Responses." Therefore the sum of manual plus automated now may not equal 100%.

N.A. = DATA NOT AVAILABLE

EXHIBIT V-163

INSURANCE CARRIERS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=22)			BRANCHES (N=19)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
File Maintenance	23%	23%	-	11%	26%	-
Policy Accounting	15	23	-	5	32	-
Commission Accounting	10	28	-	6	26	-
Policy Issue/Renewals	23	15	-	11	47	-
Claims Processing	15	23	-	11	53	6
Actuarial Statistics	10	23	-	11	21	-
Other	-	10	-	-	6	-

*On each question there was a varying percentage of "No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-164

INSURANCE CARRIERS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - BRANCHES

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=7)			20 - 99 EMPLOYEES (N=6)			100+ EMPLOYEES (N=6)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
File Maintenance	29%	14%	-	-	33%	-	-	33%	-
Policy Acctg	14	29	-	-	33	-	-	33	-
Commission Acctg	14	29	-	-	17	-	-	33	-
Policy Issue/ Renewals	14	29	-	17	33	-	-	83	-
Claims Process.	14	43	-	-	67	-	17	50	17
Actuarial Stat.	14	14	-	-	17	-	-	33	-
Other	-	-	-	-	33	-	-	17	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-165

INSURANCE CARRIERS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=12)			20 - 99 EMPLOYEES (N=7)			100+ EMPLOYEES (N=3)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
File Maintenance	25%	8%	-	14%	29%	-	33%	67%	-
Policy Acctg	17	8	-	14	29	-	-	67	-
Commission Acctg	17	17	-	-	29	-	-	67	-
Policy Issue/ Renewals	25	-	-	14	29	-	33	33	-
Claims Process.	17	8	-	14	29	-	-	67	-
Actuarial Stat.	8	25	-	14	14	-	-	33	-
Other	-	8	-	-	-	-	-	33	-

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-166

INSURANCE CARRIERS:
EDP, OFFICE, AND COMMUNICATION NEEDS
(BY SIZE OF ESTABLISHMENT)

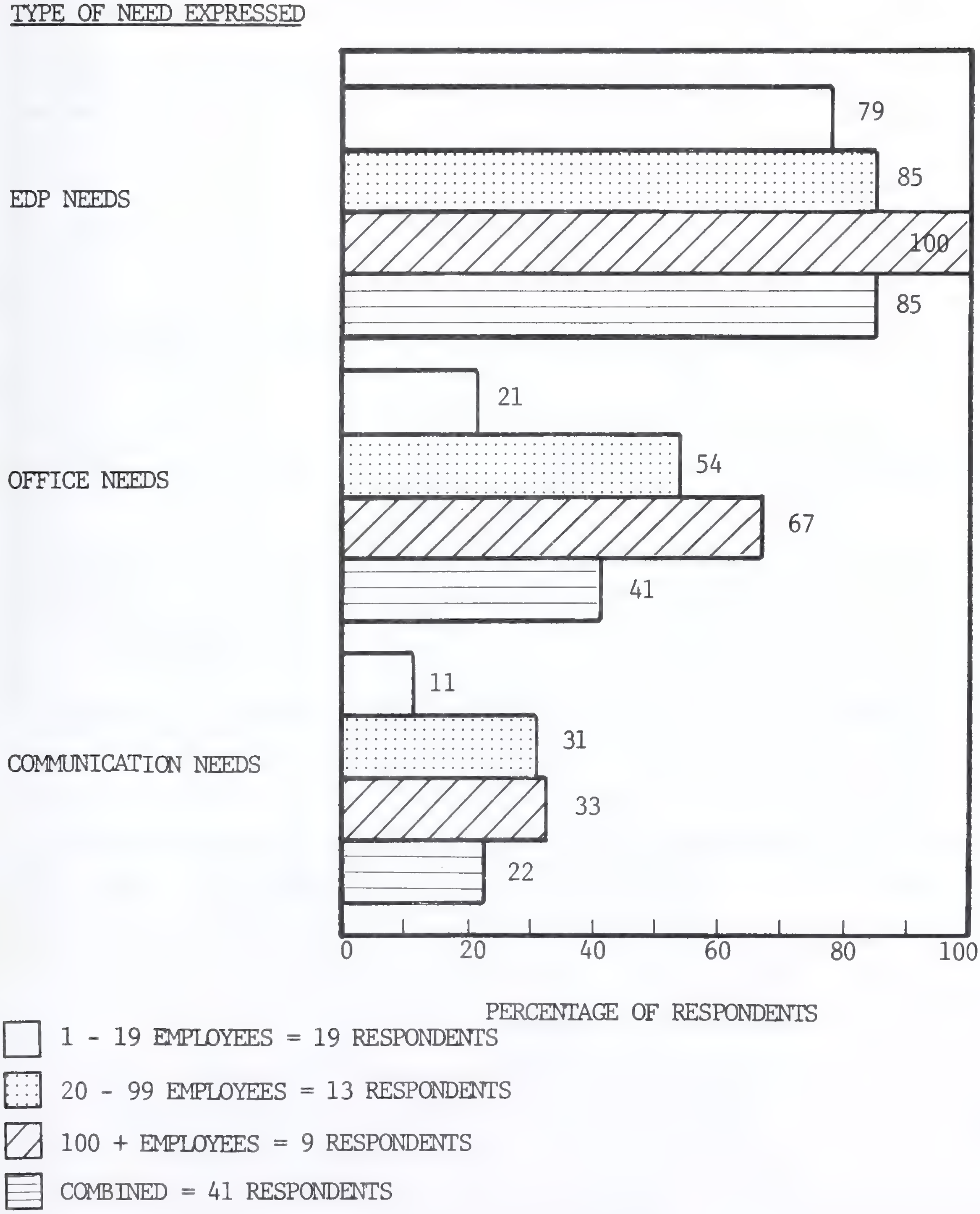


EXHIBIT V-167

TOTAL CURRENT EXPENDITURES OF THE INSURANCE SECTOR

EXPENDITURE CLASSIFICATION	1 - 19 EMPLOYEES	20 - 99 EMPLOYEES	100 - 499 EMPLOYEES	TOTAL
EDP EQUIPMENT SERVICES, AND SUPPLIES	$61.8M	$79.3M	$74.9M	$216M
OFFICE EQUIPMENT	$72.0M	$63.3M	$54.7M	$190M
COMMUNICATIONS EQUIPMENT AND SERVICES	$189.5M	$166.5M	$144.0M	$500M
TOTAL	$323.3M	$309.1M	$273.6M	$906M

EXHIBIT V-168

AVERAGE CURRENT EXPENDITURES

OF THE INSURANCE SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$ 217	N/A
OFFICE EQUIPMENT	191	N/A
COMMUNICATIONS EQUIPMENT & SERVICES	502	N/A

N/A = NOT APPLICABLE

J. HEALTH SERVICES

J. HEALTH SERVICES

1. INDUSTRY CHARACTERISTICS

- The health services sector has a high percentage of small establishments currently using computer equipment and services and desiring more automated equipment and services of every type. But its current use of word processing equipment is very low, and there was no reported use of communications interconnect equipment at all.

- The health services sector is comprised almost entirely of small establishments, including doctors and other single practitioners (see Exhibit V-169). Over 825,000 establishments, more than 99 percent of all establishments in the health services sector, have less than 500 employees, and in total account for 2.52 million employees. The industries contained in the health services sector are:

  - Offices of Physicians, Dentists, Osteopathic Physicians, and other Health Practitioners (SIC 801, 802, 803, 804).

  - Nursing and Personal Care Facilities (SIC 805).

  - Hospitals (SIC 906).

  - Medical and Dental Laboratories (SIC 807).

  - Outpatient Care Facilities (SIC 808).

  - Other Health Services (SIC 809).

- Small establishments of the health services industry spend $1.5 billion annually on equipment and services, including:

- EDP equipment.

- EDP services.

- Office equipment.

- Communications equipment.

- Communications services.

- Supplies.

- The industry subsector which is the focus of this section is the hospital group (SIC 806). The hospital industry is not structured according to the general trends of the health services sector, but does control the expenditures of this sector.

- By definition, there are no Fortune 500/Fortune 50 equivalents of hospitals, so all have been treated as independent establishments.

- Although there are some specialized hospitals with fewer than 20 employees, they are comparatively rare and have not been included in this report.

- There are some regional concentrations in the hospital industry, as shown in Exhibit V-170:

  - Twenty-one percent of all small establishment hospitals are located in California and Texas.

  - Another 12.5 percent are located in New York, Pennsylvania, and Ohio.

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

- Sixty-five percent of all respondents stated that they have their own EDP equipment (see Exhibit V-171):

  - Seventy-seven percent of respondents with more than 100 employees cited EDP equipment installed.

  - Many hospitals shared computers with other local hospitals.

- Approximately one-third of all respondents used computer services, but services were used primarily for administrative functions (see Exhibit V-172):

  - A common reason for not using computer services was ownership of a computer.

- EDP penetration in the hospital industry averages 75 percent (see Exhibit V-173):

  - Eighty-five percent of respondents from establishments with more than 100 employees used EDP equipment or services.

- There is average acceptance of word processing equipment in establishments with more than 100 employees, but none below that level:

  - Twenty-three percent of large respondents cited usage of word processing equipment (see Exhibit V-174).

- Fifty-nine percent of respondents used on-site switching equipment, almost all of it PABX, and all supplied by the local telephone company (see Exhibit V-175).

- There is a slight usage (2 percent) of non-DDD communications services reported by hospitals in the form of Telex and leased lines.

- There is no reported usage of interconnect equipment; but 24 percent of establishments cited needs which could be met with interconnect equipment.

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-176 and V-177 show that respondents use EDP very much more for financial/administrative functions than for industry specific functions:

  - Almost all respondents used EDP for administrative functions. Less than one-third of respondents cited EDP applications for industry specific functions.

  - By 1983, no additional respondents expect to become automated that are not already automated.

- Over 75 percent of respondents cited usage of EDP for payroll and billing (see Exhibit V-178):

  - Interest in future automation of additional administrative functions was cited only by respondents from establishments with more than 100 employees (see Exhibit V-179).

- Surprisingly, relatively few hospitals in these size categories report use of EDP in an industry specific application. Most establishments who do have automated industry specific applications currently use EDP for admissions/discharge and medical records census. Nevertheless, 25 percent or more of

respondents plan to use EDP for different applications in this area, specifically third party claims and automated diagnosis and health care (see Exhibit V-180 and V-181).

4. EDP, OFFICE AND COMMUNICATION NEEDS

- In the hospital industry, only the largest respondent establishments stated further needs for computer and communications equipment and services (see Exhibit V-182). However, both medium and large respondents expressed interest in word processing equipment:

  - Over 75 percent of respondents in the 100-499 employee size range expressed EDP equipment or services needs.

  - Almost one-third of all respondents said they could use word processing equipment.

  - Thirty-one percent of respondents from establishments with more than 100 employees expressed further communications needs which could be filled with interconnect communications equipment.

- EDP needs were expressed exclusively by large establishments, and ran the gamut from users who are just converting from the use of outside computer services to their own in-house equipment, to users who are developing their own proprietary software for resale. Many establishments have passed the stage of using EDP for tedious administrative paperwork functions and are beginning to look at the use of the computer for medical functions. Respondents' comments:

  - "Developing our own automated health care package."

  - "Improving in health care area."

  - "Finish installing our computer system."

- "Cranking up a new computer system."

- "Going on-line."

5. EXPENDITURES

- Expenditures for EDP, office and communications equipment and services were over $1.5 billion annually in the health services sector, as shown in Exhibits V-183 and V-184. Over 58 percent of expenditures for automated equipment, services, and supplies were from establishments with less than 100 employees. Since hospital establishments are not a numerically large percentage of the health services sector compared to doctors and other practitioners, both the level and rate of expenditure show up relatively low among the other sectors, even though the percentage of penetration is high.

  - Annual expenditures for EDP equipment, services and supplies were $360 million or $145 per employee.

  - Annual expenditures for office equipment were $316 million or $127 per employee.

  - Annual expenditures for communications equipment and services were $833 million or $336 per employee.

EXHIBIT V-169

STRUCTURE OF HEALTH SERVICES AND HOSPITALS SECTORS
(BY SIZE OF ESTABLISHMENT, 1975)

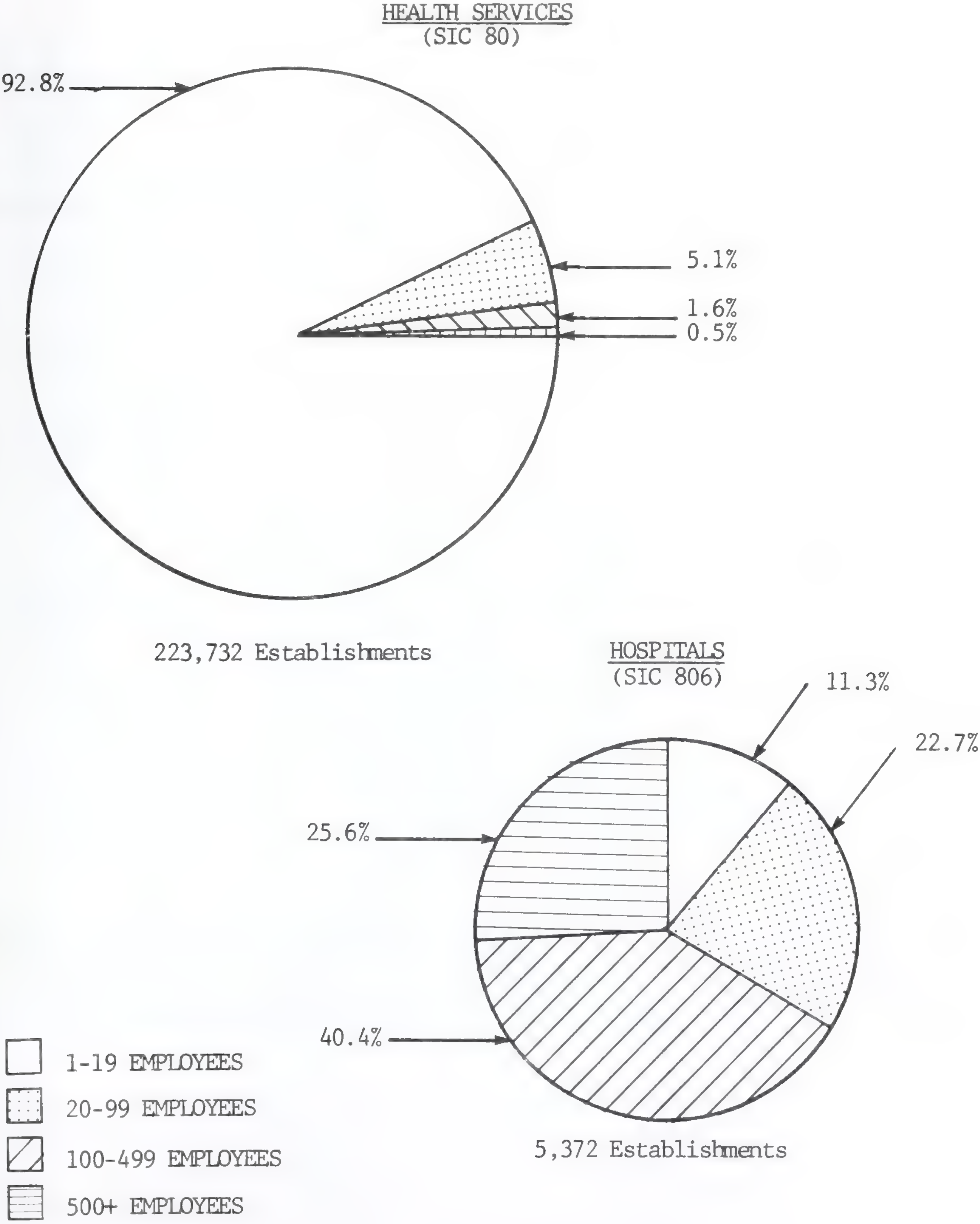


EXHIBIT V-170

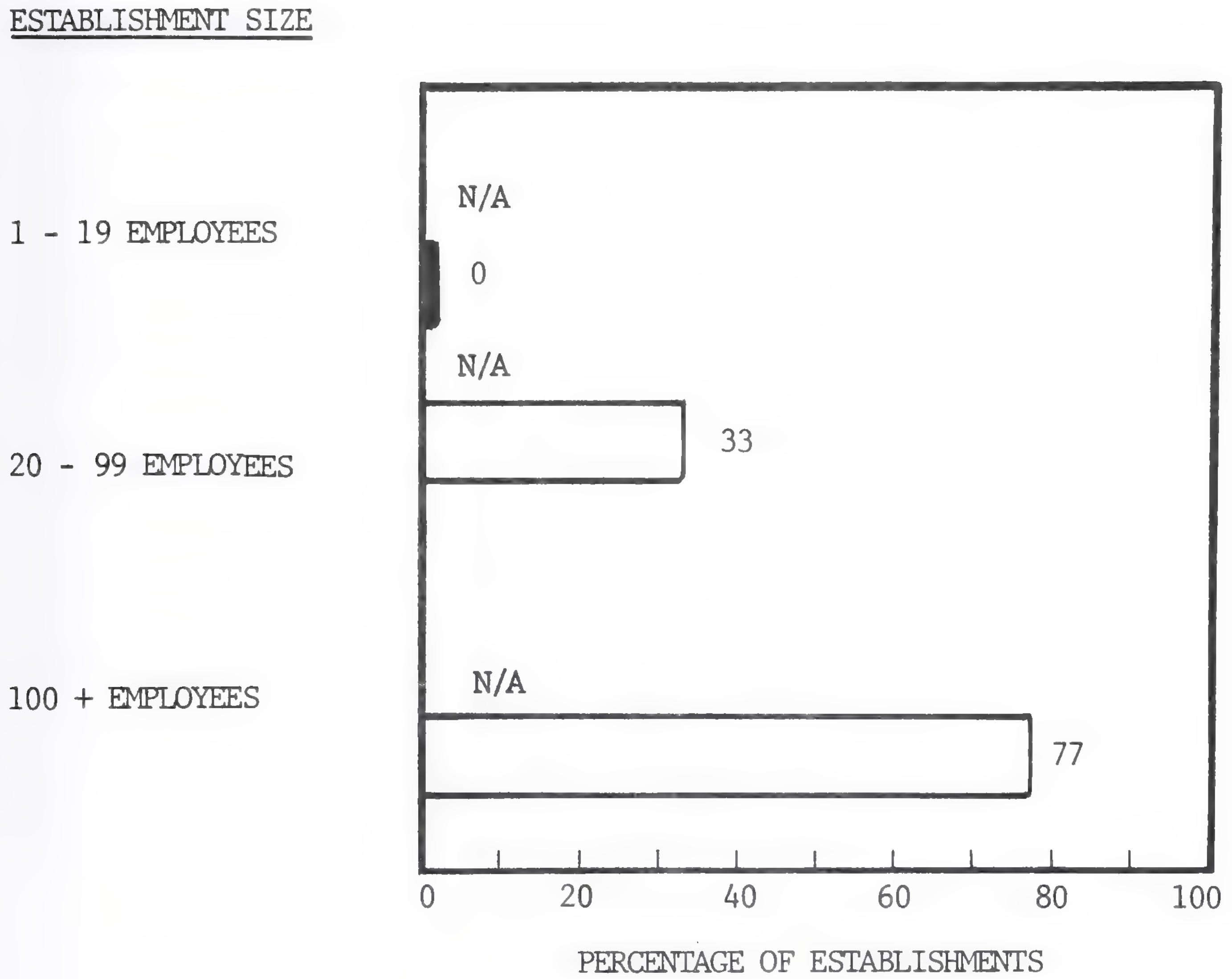
DISTRIBUTION OF HOSPITAL ESTABLISHMENTS (BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	60	1.5%	MT	49	1.2%
AK	13	0.3	NE	58	1.5
AZ	34	0.9	NV	7	0.2
AR	51	1.3	NH	24	0.6
CA	480	12.0	NJ	62	1.6
CO	59	1.5	NM	24	0.6
CT	33	0.9	NY	196	4.9
DE	8	0.2	NC	102	2.6
DC	8	0.2	ND	54	1.4
FL	133	3.3	OH	130	3.2
GA	71	1.8	OK	66	1.7
HI	12	0.3	OR	57	1.4
ID	15	0.3	PA	175	4.4
IL	128	3.2	RI	9	0.2
IN	49	1.2	SC	39	1.0
IA	57	1.4	SD	47	1.2
KS	90	2.3	TN	111	2.8
KY	90	2.3	TX	360	9.0
LA	91	2.3	UT	22	0.6
ME	51	1.3	VT	23	0.6
MD	36	0.9	VA	96	2.4
MA	95	2.4	WA	72	1.8
MI	147	3.7	WV	57	1.4
MN	77	1.9	WI	116	2.9
MS	45	1.1	WY	15	0.3
MO	93	2.3			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				3,997	100.0%

EXHIBIT V-171

HOSPITALS: EDP EQUIPMENT INSTALLED

(BY TYPE AND SIZE OF ESTABLISHMENT)



INDEPENDENT = 17 RESPONDENTS

N/A = NOT APPLICABLE

EXHIBIT V-172

HOSPITALS: USE OF COMPUTER SERVICES - INDEPENDENTS

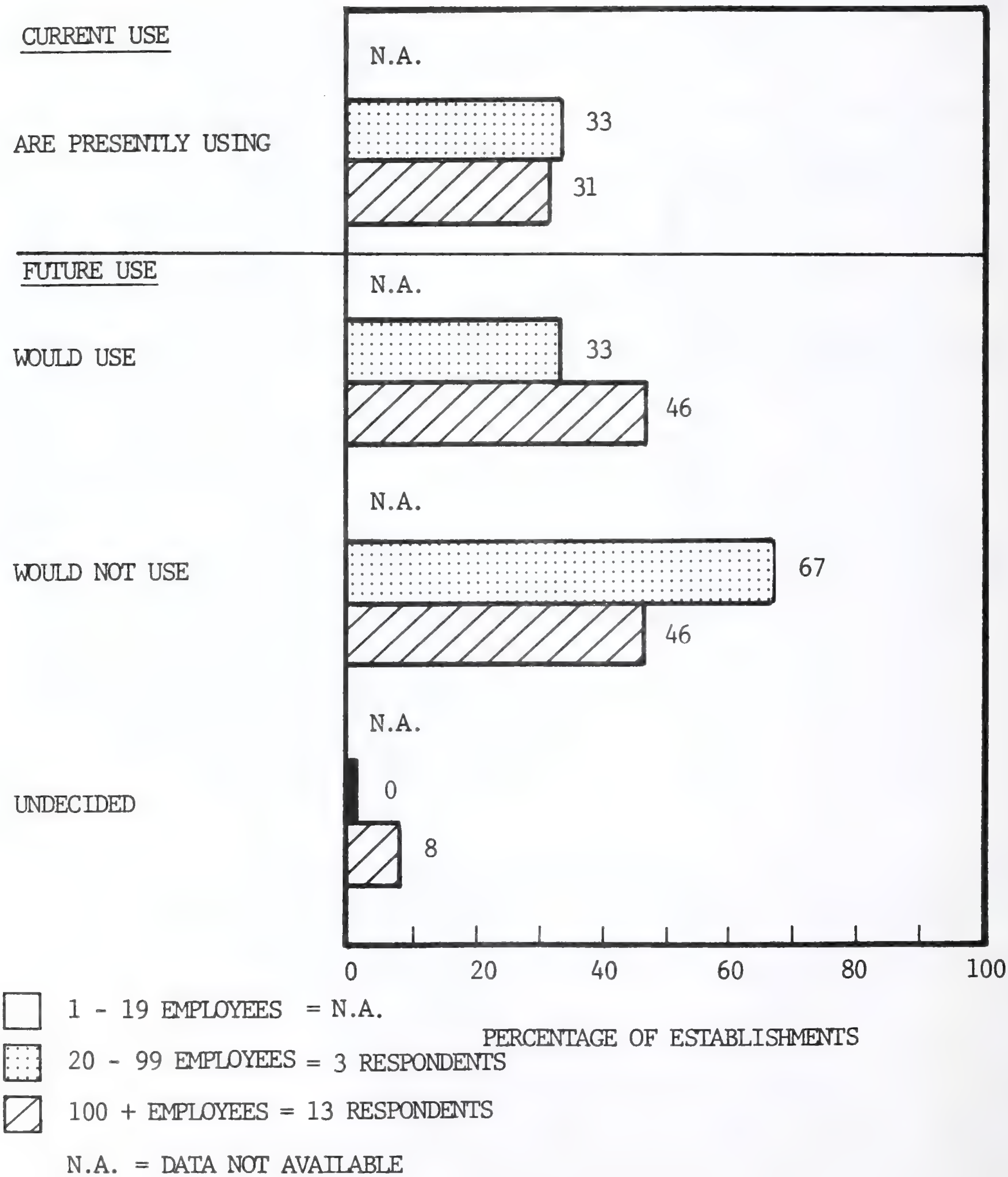
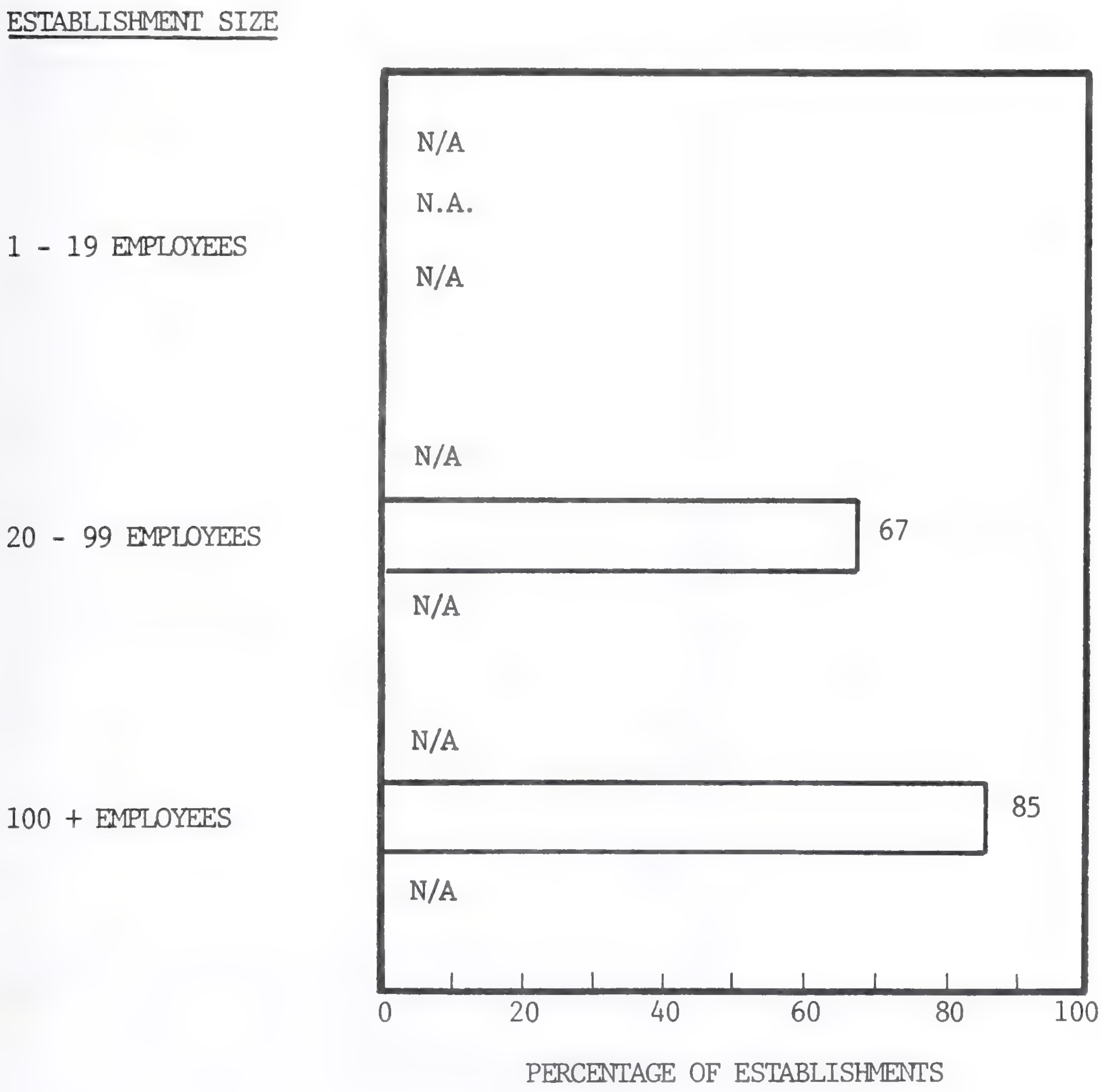


EXHIBIT V-173

HOSPITALS: PERCENTAGE OF USERS OF COMPUTER EQUIPMENT OR SERVICES OR BOTH (BY SIZE OF ESTABLISHMENT)



☐ INDEPENDENT = 17 RESPONDENTS

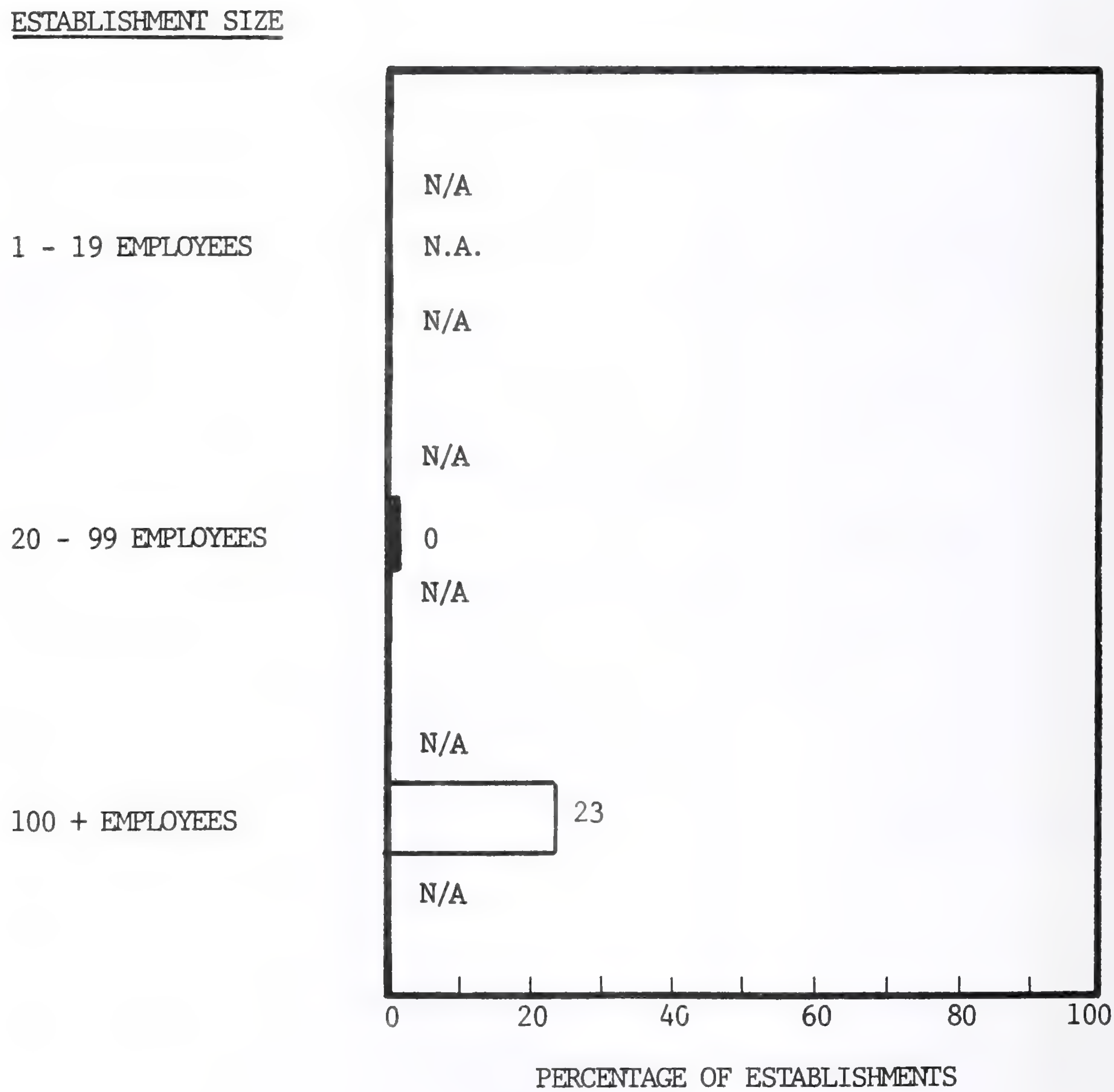
N.A. = DATA NOT AVAILABLE

N/A = NOT APPLICABLE

EXHIBIT V-174

HOSPITALS: USERS OF OFFICE AUTOMATION

(BY SIZE OF ESTABLISHMENT)



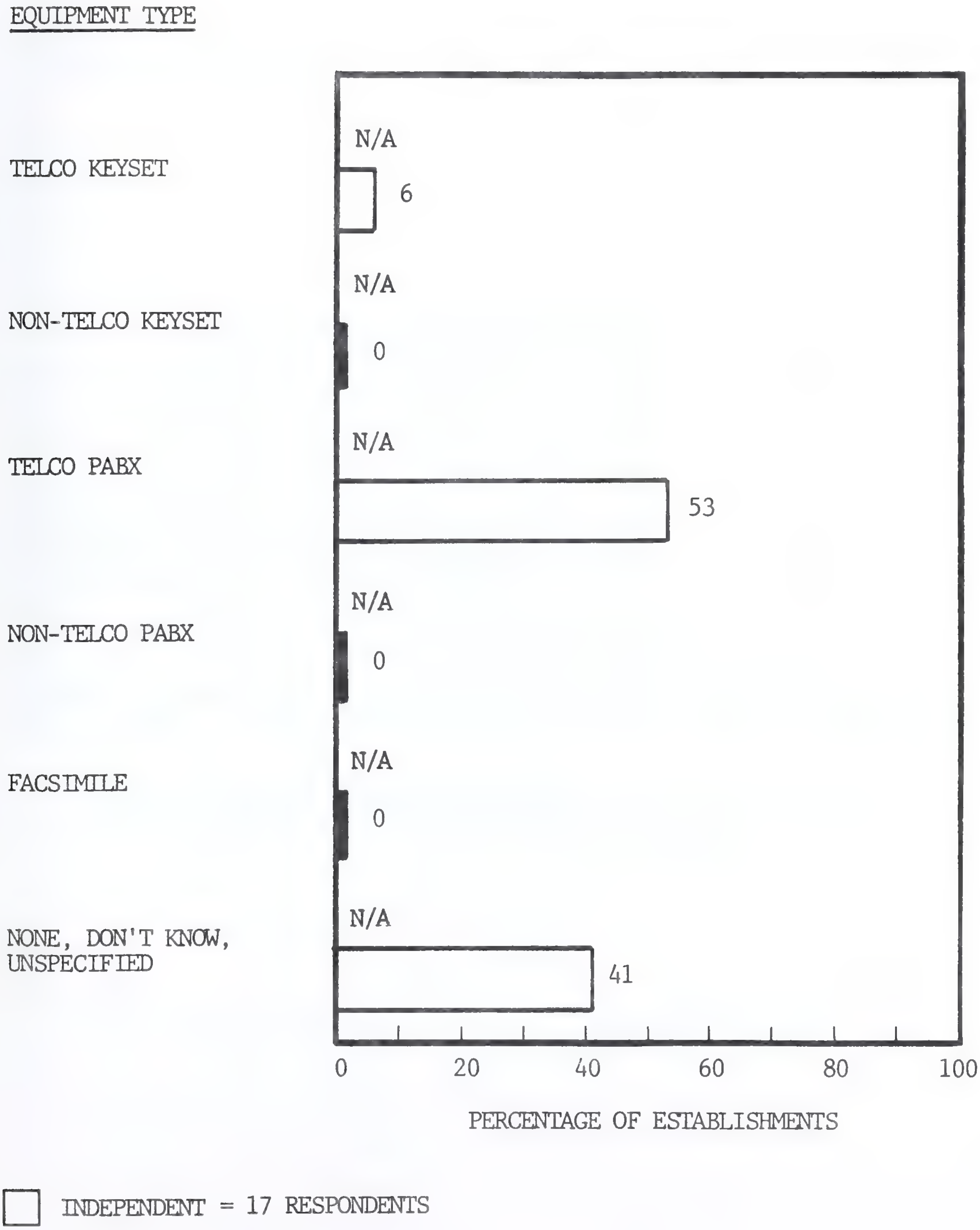
INDEPENDENT = 17 RESPONDENTS

N.A. = DATA NOT AVAILABLE

N/A = NOT APPLICABLE

EXHIBIT V-175

HOSPITALS: COMMUNICATIONS EQUIPMENT INSTALLED - BRANCHES AND INDEPENDENTS



N/A = NOT APPLICABLE

EXHIBIT V-176

HOSPITALS: USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

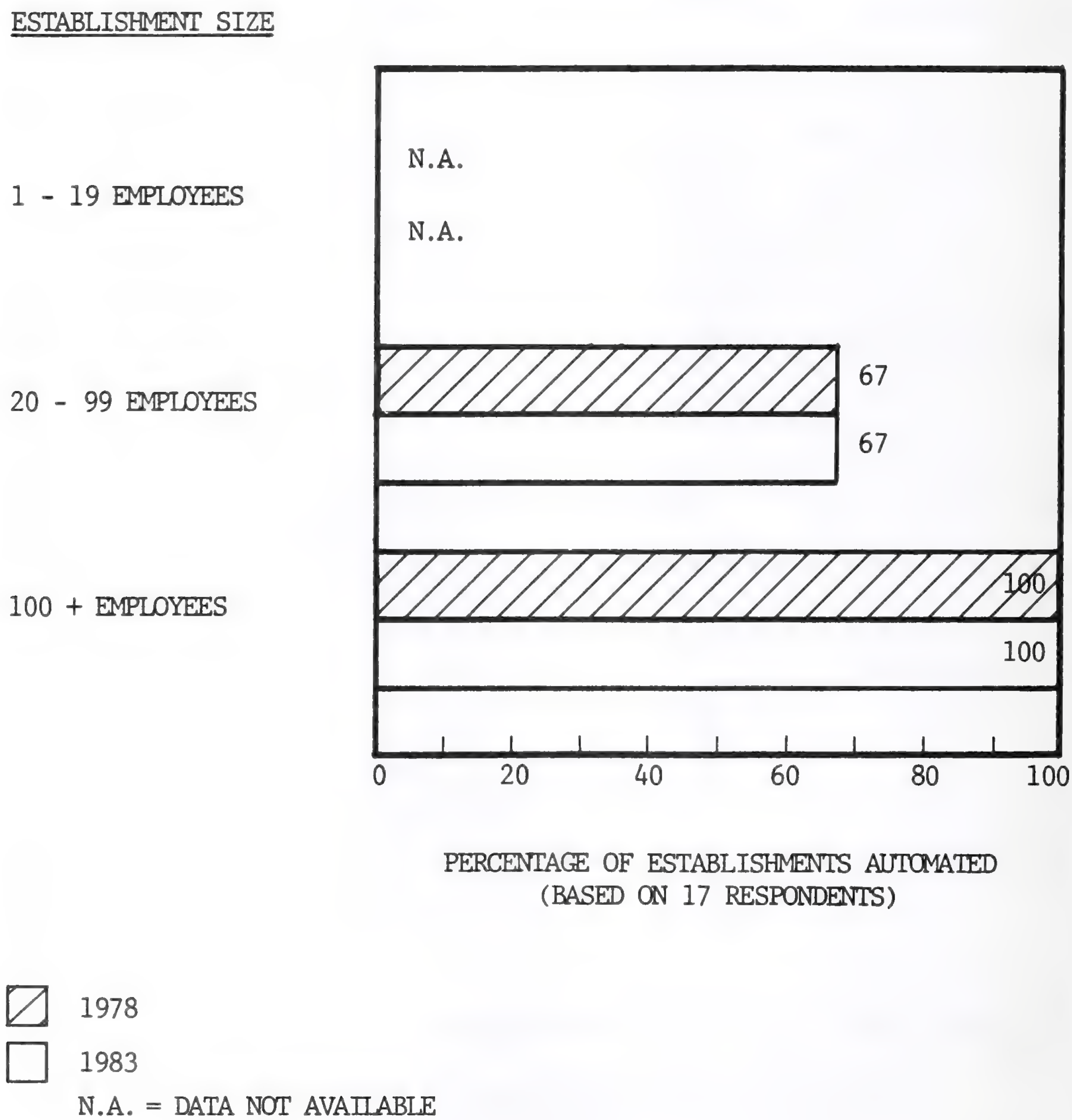
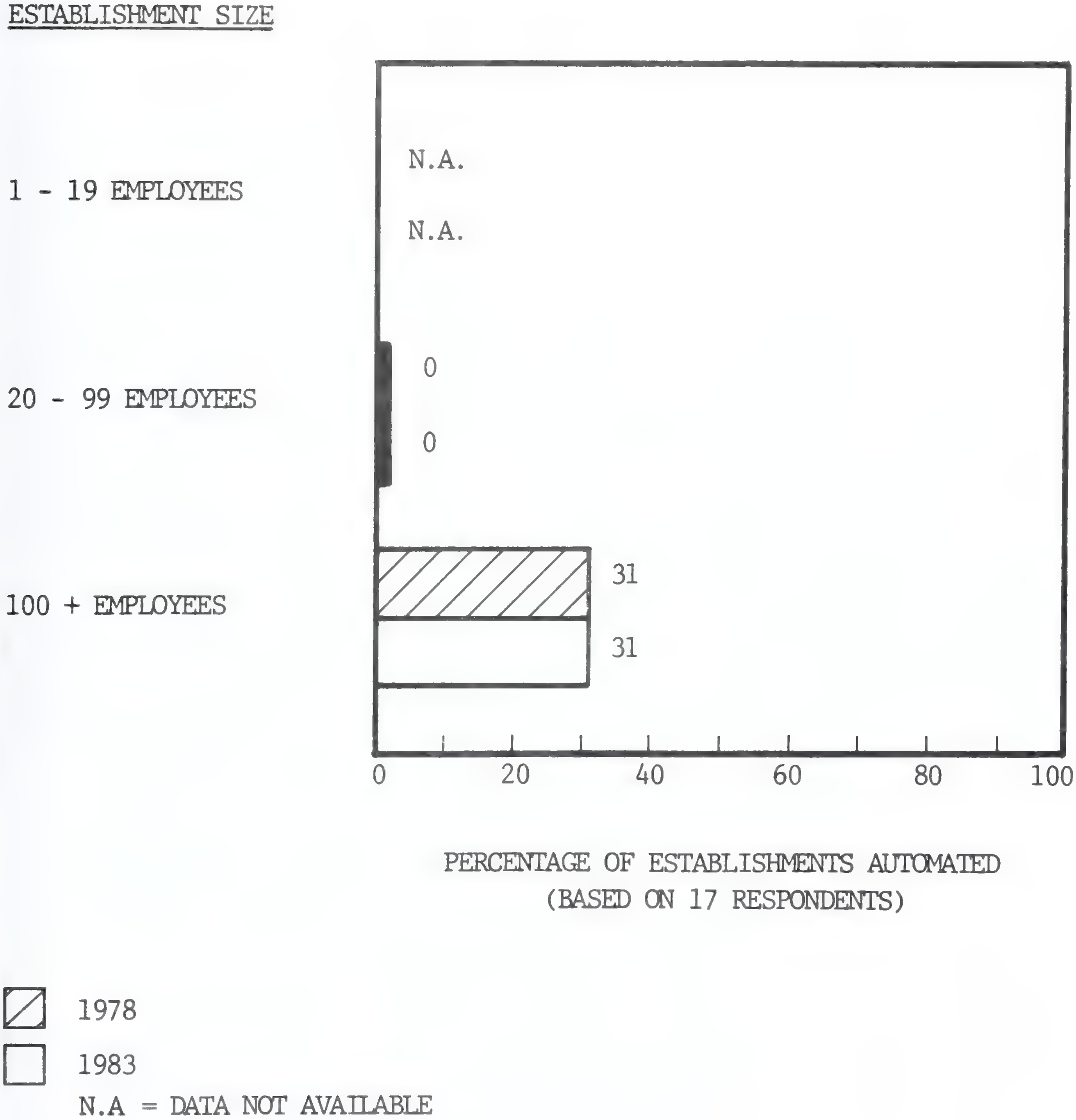


EXHIBIT V-177

HOSPITALS: USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978/1983

(BY SIZE OF ESTABLISHMENT)



INPUT

EXHIBIT V-178

HOSPITALS:
ADMINISTRATIVE/SALES APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=17)			BRANCHES		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-
FINANCE & ACCOUNTING						
Payroll	-	76%	6%	N/A	N/A	N/A
Billing	-	76	6	-	-	-
Accounts Receivable	-	59	18	-	-	-
Accounts Payable	-	71	12	-	-	-
General Ledger	6	59	12	-	-	-
Other Finance	6	-	12	-	-	-

*On each question there was a varying percentage of "No Responses."
Therefore the sum of manual plus automated now may not equal 100%.
N/A = Not Applicable

EXHIBIT V-179

HOSPITALS:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS - INDEPENDENTS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=1)			20 - 99 EMPLOYEES (N=3)			100+ EMPLOYEES (N=13)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	N.A.	N.A.	N.A.	-	67%	-	-	85%	8%
Billing	-	-	-	-	67	-	-	85	8
Accounts Receivable	-	-	-	-	67	-	8	62	15
Accounts Payable	-	-	-	-	67	-	-	77	15
General Ledger	-	-	-	-	67	-	8	62	15
Other Finance	-	-	-	-	-	-	8	-	15

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

N/A = Not Applicable
N.A. = Data Not Available

EXHIBIT V-180

HOSPITALS:

INDUSTRY SPECIFIC APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=17)			BRANCHES		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Admissions/Discharge	-	18%	-	N/A	N/A	N/A
Third Party Claims	-	-	29	-	-	-
Bed Availability Census	-	6	12	-	-	-
Medical Records Census	-	12	6	-	-	-
Utilization Review	-	-	12	-	-	-
Cafeteria Menu	-	-	6	-	-	-
Other	-	6	24	-	-	-

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.
N/A = Not Applicable

EXHIBIT V-181

HOSPITALS:

INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=1)			20 - 99 EMPLOYEES (N=3)			100+ EMPLOYEES (N=13)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Admiss/Discharge	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	-	23%	-
Third Party Claim	-	-	-	-	-	-	-	-	38
Bed Availability Census	-	-	-	-	-	-	-	8	15
Medical Records Census	-	-	-	-	-	-	-	15	8
Utilization Rev.	-	-	-	-	-	-	-	-	15
Cafeteria Menu	-	-	-	-	-	-	-	-	8
Other	-	-	-	-	-	-	-	8	31

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

N.A. = Data Not Available

EXHIBIT V-182

HOSPITALS:
EDP, OFFICE, AND COMMUNICATION NEEDS
(BY SIZE OF ESTABLISHMENT)

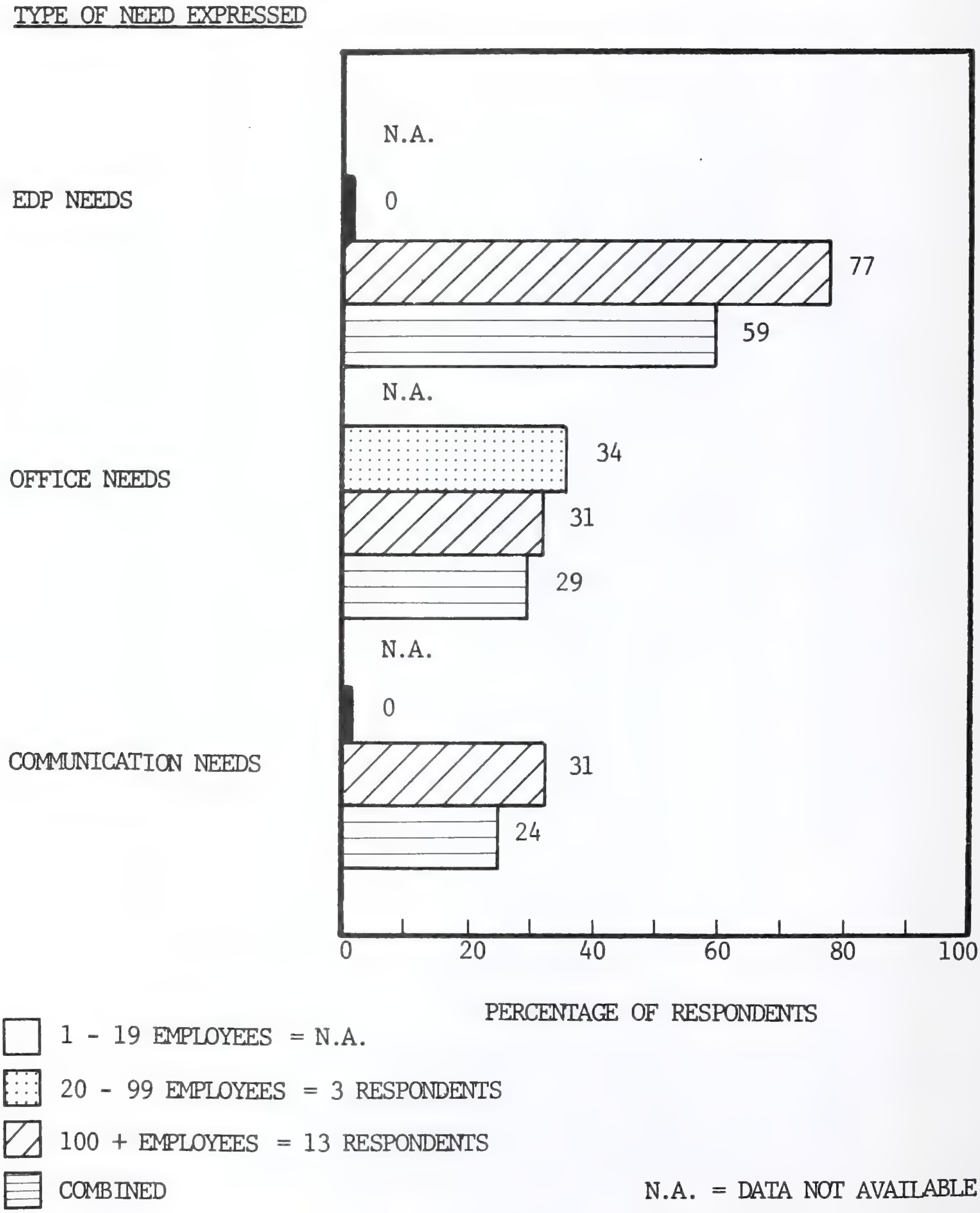


EXHIBIT V-183

TOTAL CURRENT EXPENDITURES
OF THE HEALTH SERVICES SECTOR

EXPENDITURE CLASSIFICATION	1 - 19 EMPLOYEES	20 - 99 EMPLOYEES	100 - 499 EMPLOYEES	TOTAL
EDP EQUIPMENT SERVICES, AND SUPPLIES	N.A.	$139.3M	$220.7M	$360M
OFFICE EQUIPMENT	$135.2M	$69.8M	$111.0M	$316M
COMMUNICATIONS EQUIPMENT AND SERVICES	$356.5M	$184.1M	$292.4M	$833M
TOTAL	$491.7M	$393.2M	$624.1M	$1,509M

N.A. = DATA NOT AVAILABLE

EXHIBIT V-184

AVERAGE CURRENT EXPENDITURES

OF THE HEALTH SERVICES SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$145	N/A
OFFICE EQUIPMENT	127	N/A
COMMUNICATIONS EQUIPMENT & SERVICES	336	N/A

N/A = NOT APPLICABLE

K. EDUCATIONAL SERVICES

K. EDUCATIONAL SERVICES

I. INDUSTRY CHARACTERISTICS

- The small establishment segment of the educational services industry sector is characterized by an average level of use of computer equipment, a high level of use of word processing equipment, but a low level of computer services usage and no reported use of interconnect communications equipment. Moderate levels of need were expressed for computer and communications improvements, but no further needs were expressed for office automation.

- The educational services sector is comprised almost entirely of small establishments (see Exhibit V-185). Almost 37,000 establishments, more than 99 percent of all establishments in the educational services sector, have less than 500 employees. In total, there are 560,000 small establishment employees in the educational services sector. The industries contained in the educational services sector are:

  - Elementary and secondary schools (SIC 821).

  - Colleges, universities, professional schools, and junior colleges (SIC 822).

  - Libraries and information centers (SIC 823).

  - Correspondence schools and vocational schools (SIC 824).

  - Other schools and educational services (SIC 829).

- Small establishments of the educational services sector spend $369 million annually on equipment and services, including:

- EDP equipment.

- EDP services.

- Office equipment.

- Communications equipment.

- Communications services.

- Supplies.

- The industry subsector which is the focus of this section is the junior college industry (SIC 8222), part of the colleges and universities group. The junior college industry follows the general trends found in the educational services sector.

- By definition, there are no Fortune 500/Fortune 50 equivalents of junior colleges, so all have been treated as independent establishments.

- For this report, no respondents with less than 20 employees were interviewed.

- There are some regional concentrations in the junior college industry, as shown in Exhibit V-186:

  - Twenty-eight percent of all junior colleges are located in California, New York, and Pennsylvania; another 14 percent are in Illinois, Ohio, and Massachusetts.

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

- About 60 percent of all establishments report having EDP equipment installed, as usual more at larger respondent establishments than at medium size ones (see Exhibit V-187).

- Use of computer services is average among the larger junior colleges, but below average for those with 20-99 employees:

  - Thirty-eight percent of establishments with more than 100 employees, and 18 percent of those with 20-99 employees report using computer services.

  - Common computer service applications are schedules and attendance records.

  - Sixty-two percent of all respondents stated they would not consider using computer services. A common reason for not using computer services was the opinion that money was better spent when put towards ownership of a computer system (see Exhibit V-188).

- EDP penetration among junior colleges is rated at 55 percent for establishments of 20-99 employees, and 100 percent of establishments with more than 100 employees (see Exhibit V-189).

- There is wide acceptance of automated word processing equipment in junior colleges (see Exhibit V-190):

  - Sixty-nine percent of respondents from establishments with more than 100 employees stated that they use automated office equipment.

  - Junior colleges and accounting firms share the highest level of use of office automation of all industries interviewed.

- Ninety-two percent of respondents used keyset equipment, and more than half of respondents cited having a PABX installed (see Exhibit V-191).

- There is little usage of other-than-DDD communications services besides WATS lines. However, 33 percent of respondents cited having WATS lines installed (see Exhibit V-192).

- All respondents stated use of telephone company-supplied equipment. There is no present use of interconnect equipment, but 17 percent of respondents stated needs which could be fulfilled with interconnect communications equipment.

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-193 and V-194 show that respondents use EDP slightly more for administrative functions than for industry specific functions.

  - Overall, 67 percent of establishments used EDP for financial/administrative functions; 54 percent of respondents cited EDP applications for industry specific functions.

  - The junior college industry group had the most plans for future EDP applications of all industries interviewed. By 1983, 88 percent of all respondents will use EDP for administrative functions and over 70 percent of respondents will use EDP for industry specific applications. All sizes of establishments are planning to expand the number of applications automated.

- Junior colleges used EDP heavily for all of the financial/administrative applications (see Exhibit V-195).

  - As in most industries, the most commonly automated administrative functions are payroll and billing.

- Two-thirds of respondents have those applications automated now.

- By 1983, over 85 percent of respondents will use EDP for payroll and billing.

- Larger junior colleges are about twice as automated as those that have 20-99 employees. For example, only 45 percent of respondents from establishments with less than 100 employees used EDP for payroll and billing, while 85 percent of respondents from establishments with more than 100 employees currently use EDP for those applications (see Exhibit V-196).

- The most frequent use of EDP in an industry specific application is for student records and grades, but the other industry specific applications are not far behind (see Exhibit V-197):

  - Fifty-four percent of respondents have automated admissions and attendance accounting, the second and third most common EDP applications.

- The same differences between size categories in EDP automation for industry specific applications exist as for financial/administrative applications (see Exhibit V-198):

  - Sixty-nine percent of respondents from establishments with more than 100 employees cited automated applications in student scheduling, admissions, student records, and attendance accounting, but few respondents cited future automation plans.

  - Respondents from establishments with less than 100 employees have these applications 27 to 45 percent automated now and over 80 percent of respondents will be using EDP for student records by 1982.

4. EDP, OFFICE AND COMMUNICATION NEEDS

- Among junior colleges, less than half of respondents cited further needs for computer equipment and services (see Exhibit V-199). Needs in other areas were lower yet:

  - Forty-two percent of respondents expressed further EDP needs.

  - No respondents expressed further office needs.

  - Seventeen percent of respondents expressed further communications needs.

- EDP needs were expressed predominantly by establishments with less than 100 employees and are indicative of an industry that has been using computers for sometime. Needs expressed were related to increased capacity, use of on-line capabilities, and addition of new applications. Specific comments included:

  - "Expand memory capacities."

  - "Use existing computer to capacity and add more software."

  - "Need a larger computer."

  - "Terminal to send data to state computer for processing."

  - "Equipment to speed up paperwork."

- Communications needs require more capacity and better cost control; for example:

  - "A system to control long distance calls."

  - "More trunk lines."

- "Will need a switchboard shortly."

5. EXPENDITURES

- Expenditures for EDP, office, and communications equipment, services, and supplies were $369 million annually in the educational services sector, as shown in Exhibits V-200 and V-201. Over 40 percent of expenditures for automated equipment, services, and supplies were from establishments with less than 100 employees. Because this industry is so small, its level of expenditure is the lowest of the twelve sectors. However, by rate of expenditure per employee it ranks seventh of twelve:

  - Annual expenditures for EDP equipment, services and supplies were $88 million or $158 per employee.

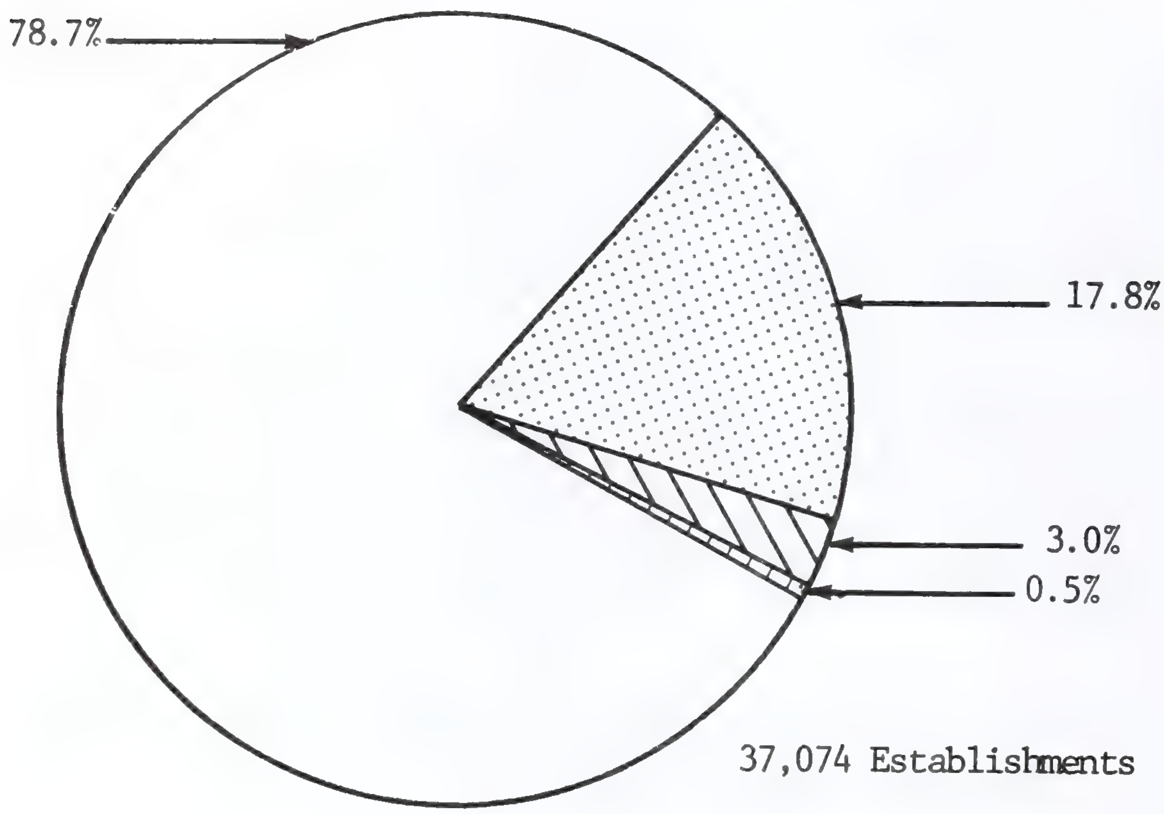
  - Annual expenditures for office equipment were $77 million or $139 per employee.

  - Annual expenditures for communications equipment and services were $204 million or $368 per employee.

EXHIBIT V-185

STRUCTURE OF EDUCATIONAL SERVICES AND COLLEGES AND UNIVERSITIES SECTORS (BY SIZE OF ESTABLISHMENT, 1975)

EDUCATIONAL SERVICES
(SIC 82)



COLLEGES AND UNIVERSITIES
(SIC 822)

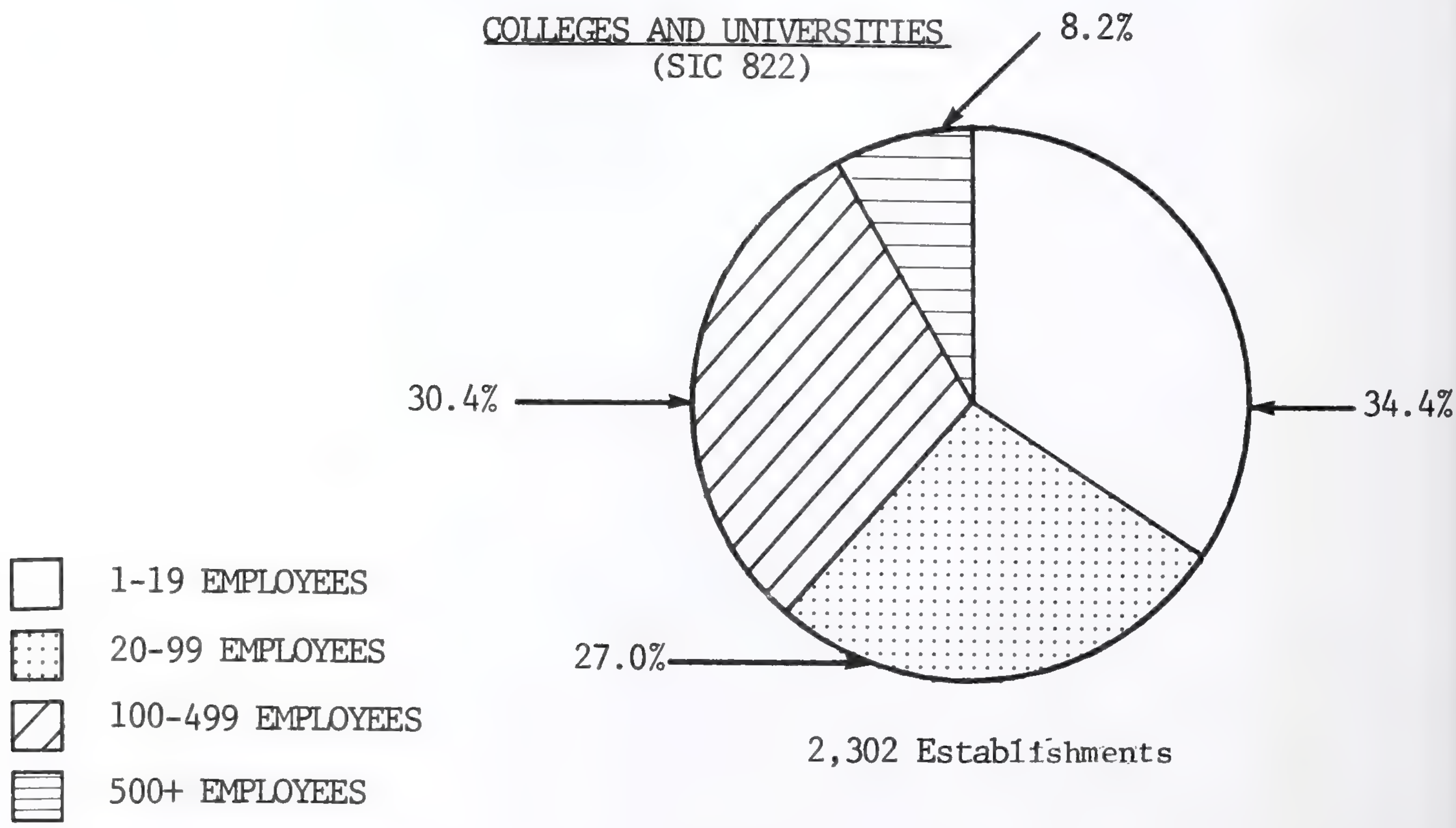


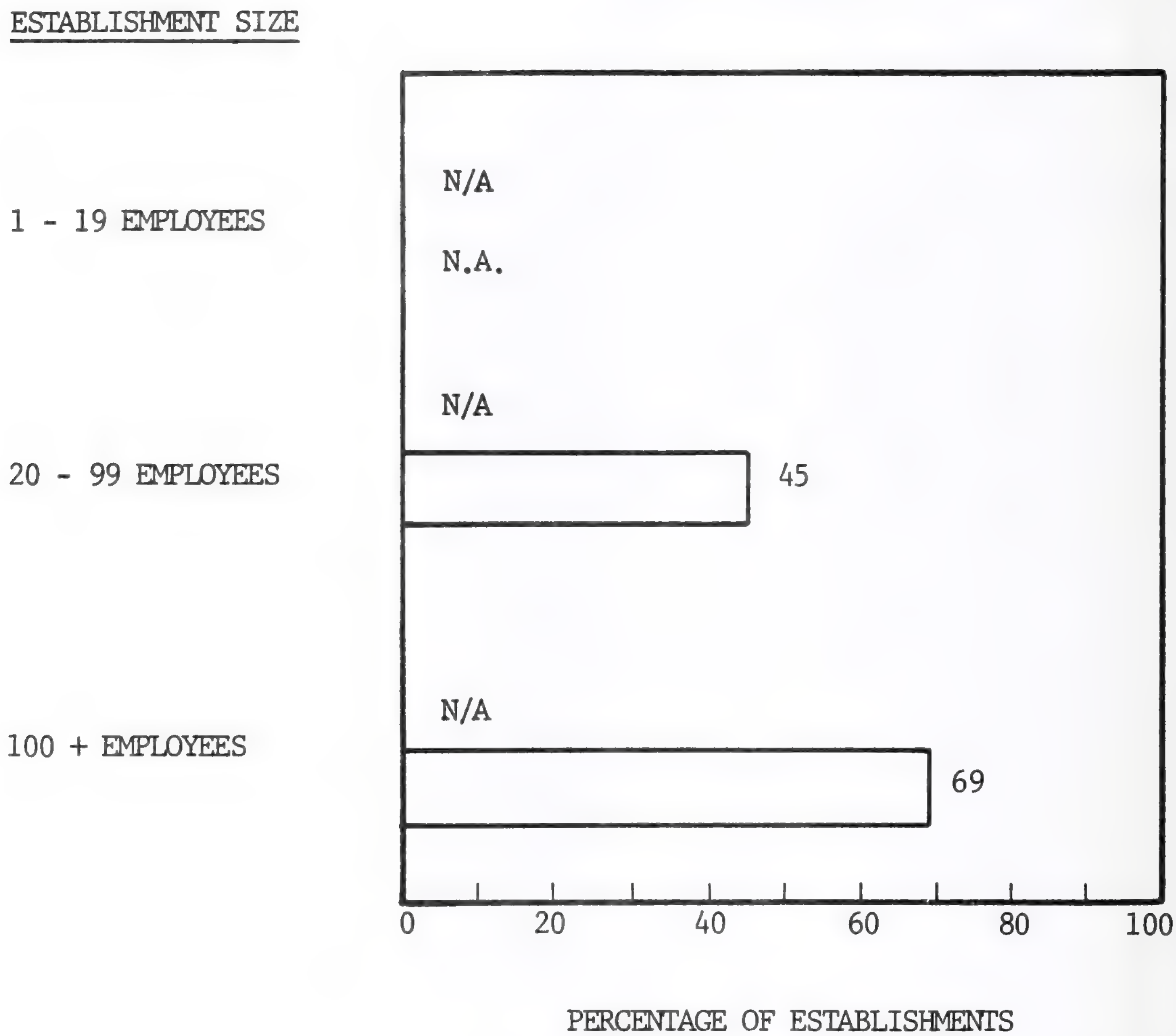
EXHIBIT V-186

DISTRIBUTION OF COLLEGES AND UNIVERSITIES ESTABLISHMENTS (BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	25	1.2%	MT	4	0.2%
AK	3	0.1	NE	21	0.9
AZ	18	0.9	NV	0	0
AR	15	0.7	NH	18	0.9
CA	221	10.5	NJ	50	2.4
CO	23	1.1	NM	7	0.3
CT	26	1.2	NY	218	10.3
DE	5	0.2	NC	50	2.4
DC	35	1.7	ND	7	0.3
FL	60	2.8	OH	99	4.7
GA	45	2.1	OK	23	1.1
HI	5	0.2	OR	27	1.3
ID	4	0.2	PA	155	7.3
IL	110	5.2	RI	11	0.5
IN	43	2.0	SC	25	1.2
IA	42	1.9	SD	12	0.6
KS	31	1.5	TN	47	2.2
KY	34	1.6	TX	80	3.8
LA	14	0.7	UT	5	0.2
ME	16	0.8	VT	17	0.8
MD	37	1.8	VA	50	2.4
MA	96	4.5	WA	34	1.6
MI	57	2.7	WV	18	0.9
MN	42	1.9	WI	40	1.9
MS	27	1.2	WY	0	0
MO	61	2.8			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				2,113	100.0%

EXHIBIT V-187

JUNIOR COLLEGES: EDP EQUIPMENT INSTALLED
(BY TYPE AND SIZE OF ESTABLISHMENT)



INDEPENDENT = 24 RESPONDENTS

COMBINED

N.A. = DATA NOT AVAILABLE

N/A = NOT APPLICABLE

EXHIBIT V-188

JUNIOR COLLEGES: USE OF COMPUTER SERVICES - INDEPENDENTS

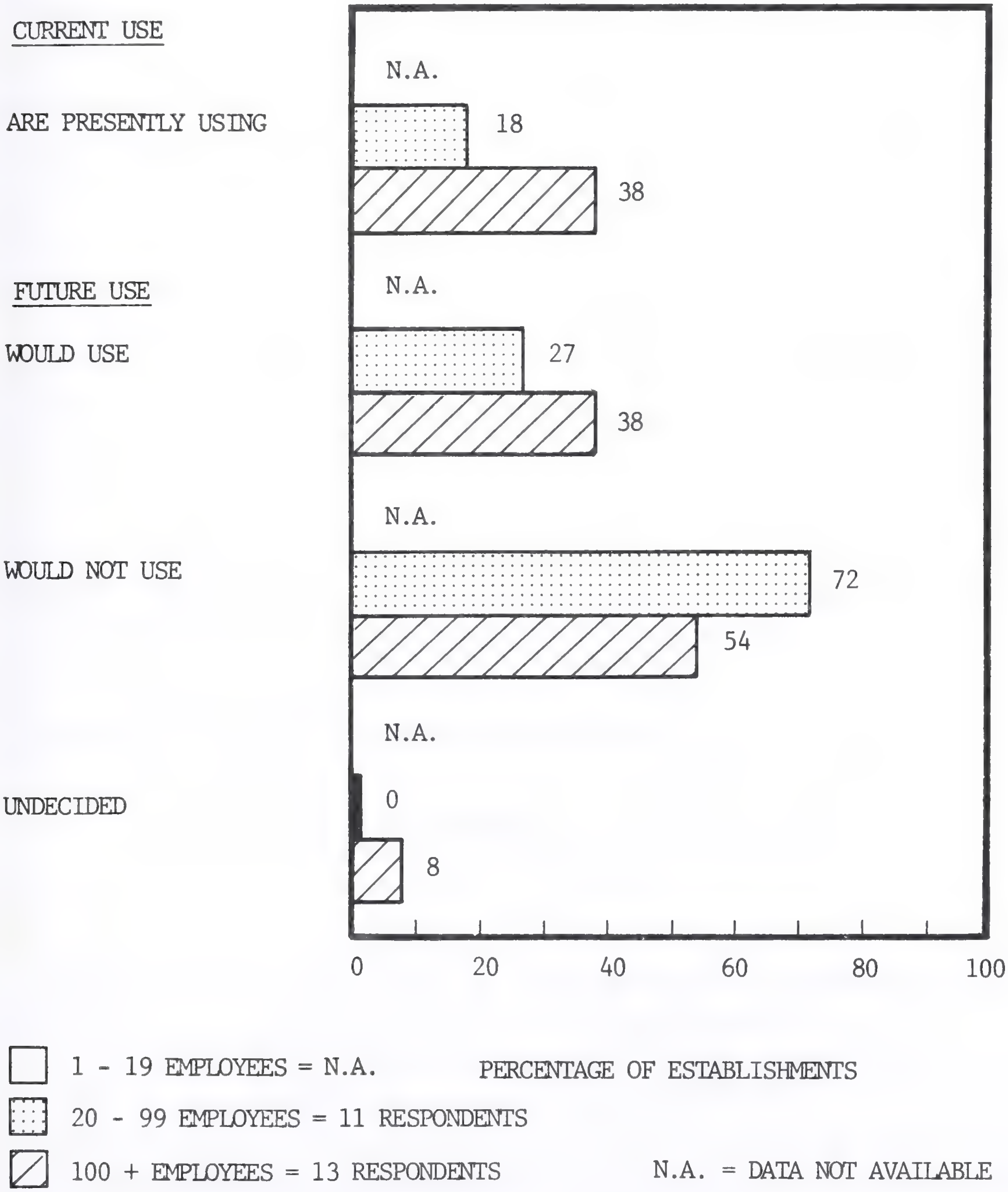
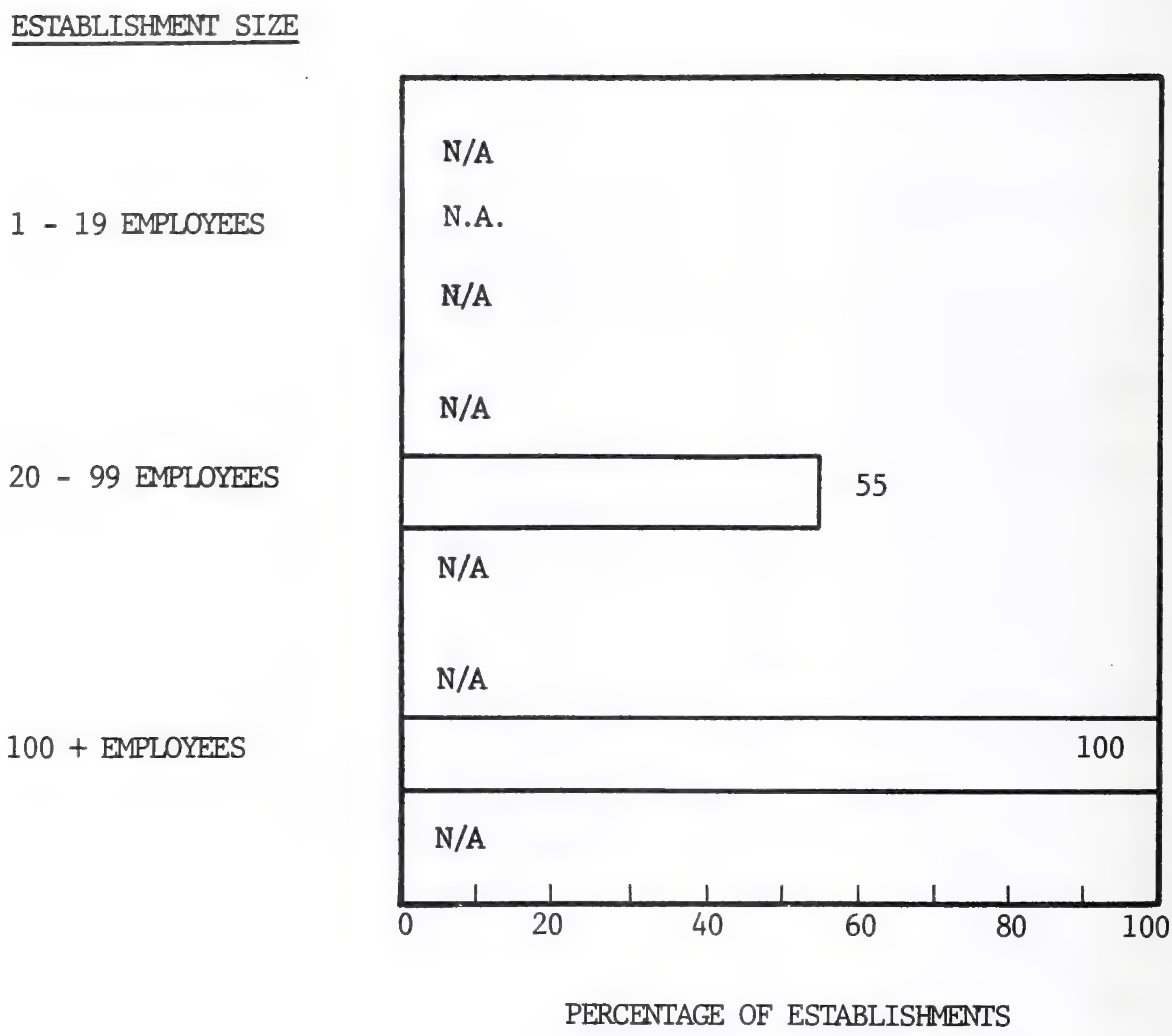


EXHIBIT V-189

JUNIOR COLLEGES: PERCENTAGE OF USERS OF COMPUTER EQUIPMENT OR SERVICES OR BOTH (BY SIZE OF ESTABLISHMENT)



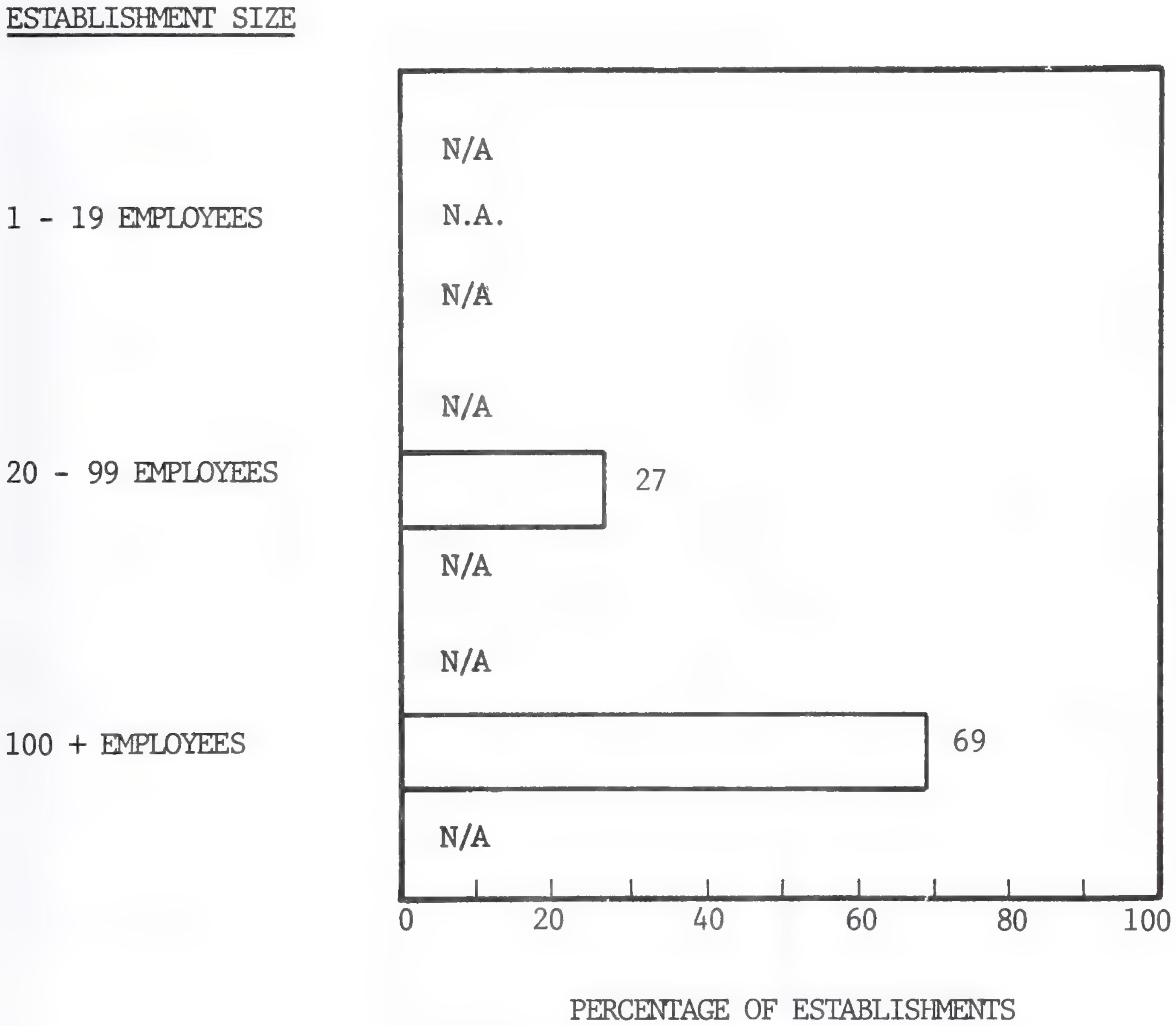
INDEPENDENT = 24 RESPONDENTS

N.A. = DATA NOT AVAILABLE

N/A = NOT APPLICABLE

EXHIBIT V-190

JUNIOR COLLEGES: USERS OF OFFICE AUTOMATION
(BY SIZE OF ESTABLISHMENT)



☐ INDEPENDENT = 24 RESPONDENTS

N.A. = DATA NOT AVAILABLE

N/A = NOT APPLICABLE

EXHIBIT V-191

JUNIOR COLLEGES: COMMUNICATIONS EQUIPMENT INSTALLED - BRANCHES AND INDEPENDENTS

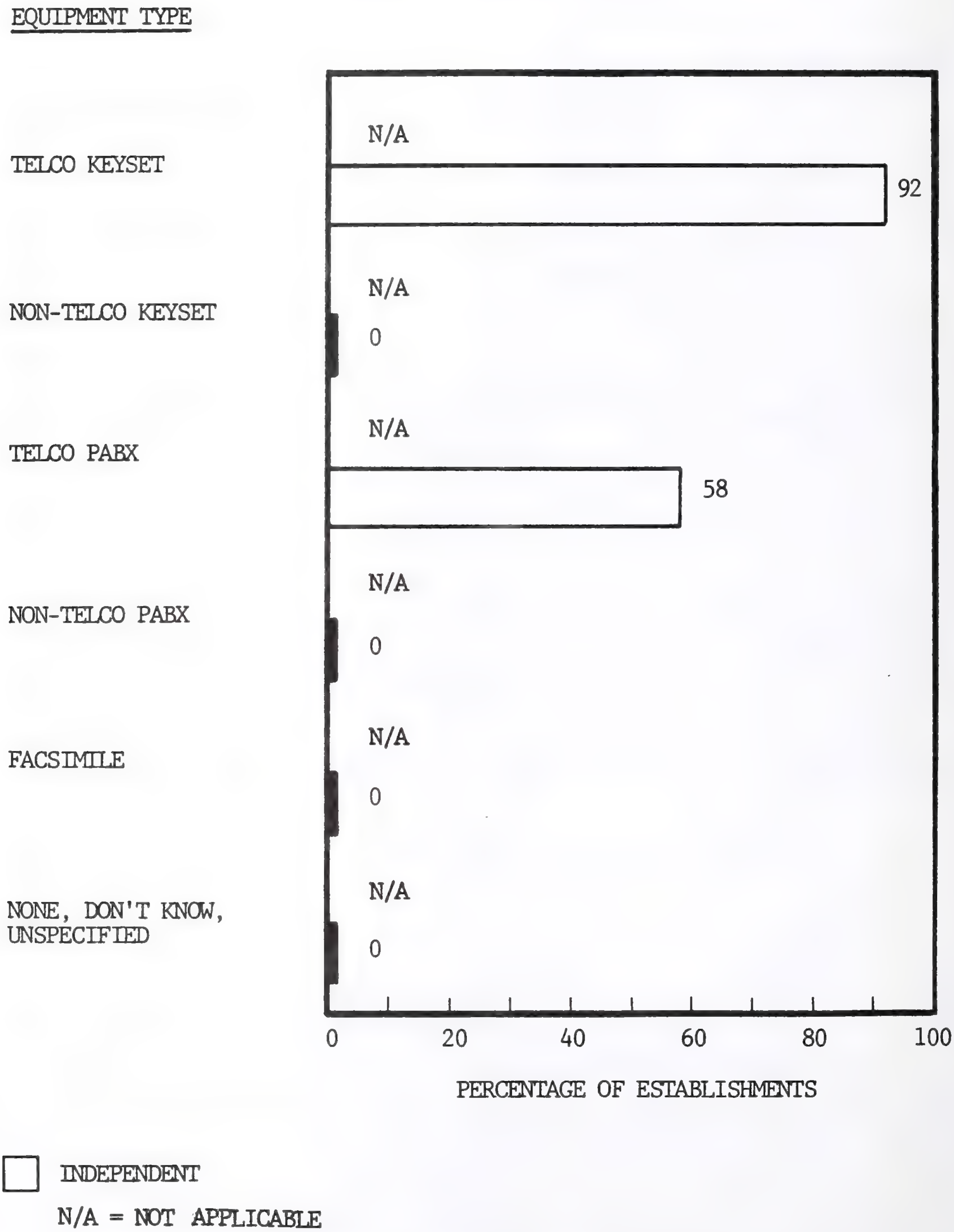
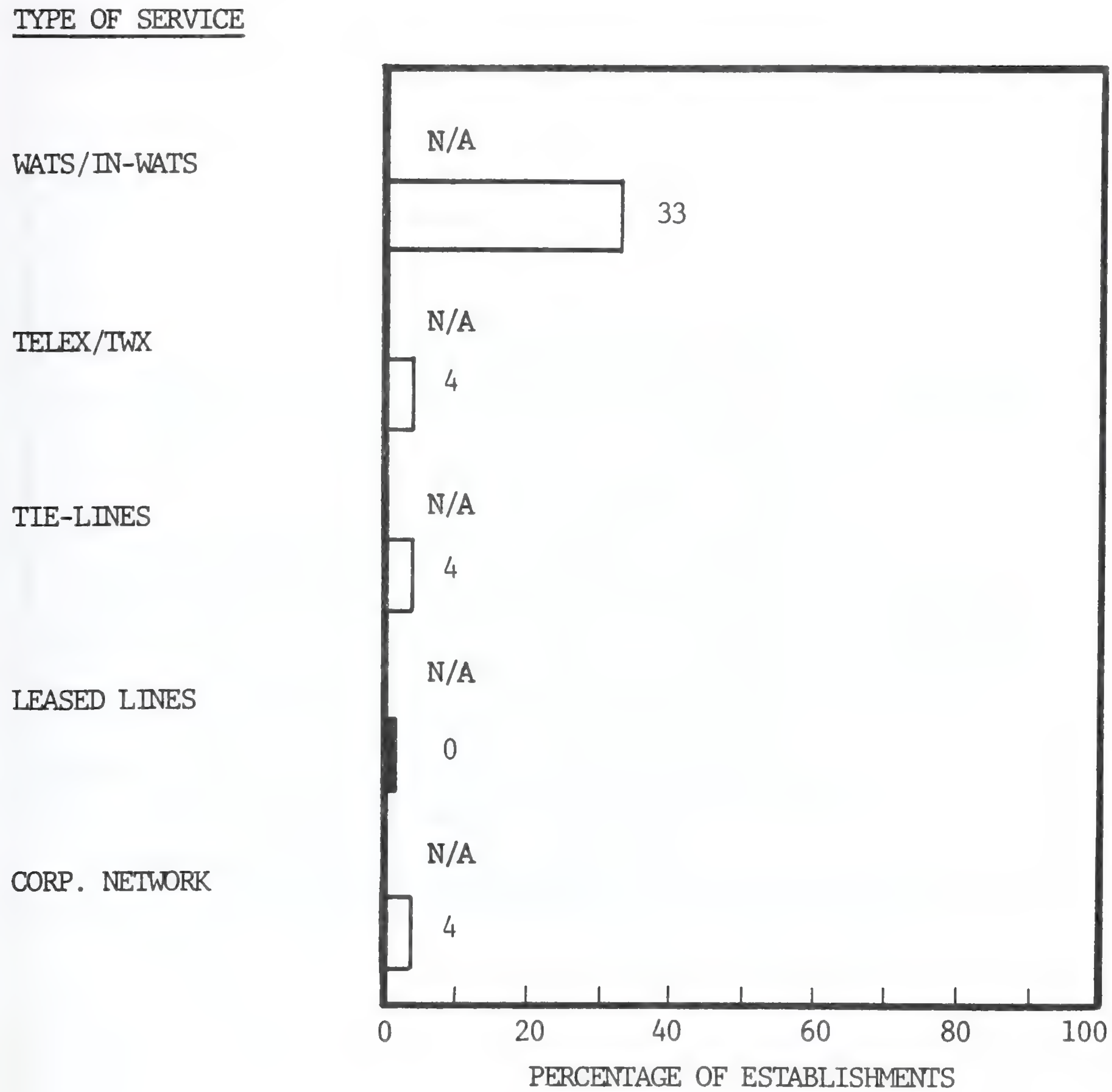


EXHIBIT V-192

JUNIOR COLLEGES: COMMUNICATIONS SERVICES INSTALLED - BRANCHES AND INDEPENDENTS



INDEPENDENT = 24 RESPONDENTS

N/A = NOT APPLICABLE

EXHIBIT V-193

JUNIOR COLLEGES: USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

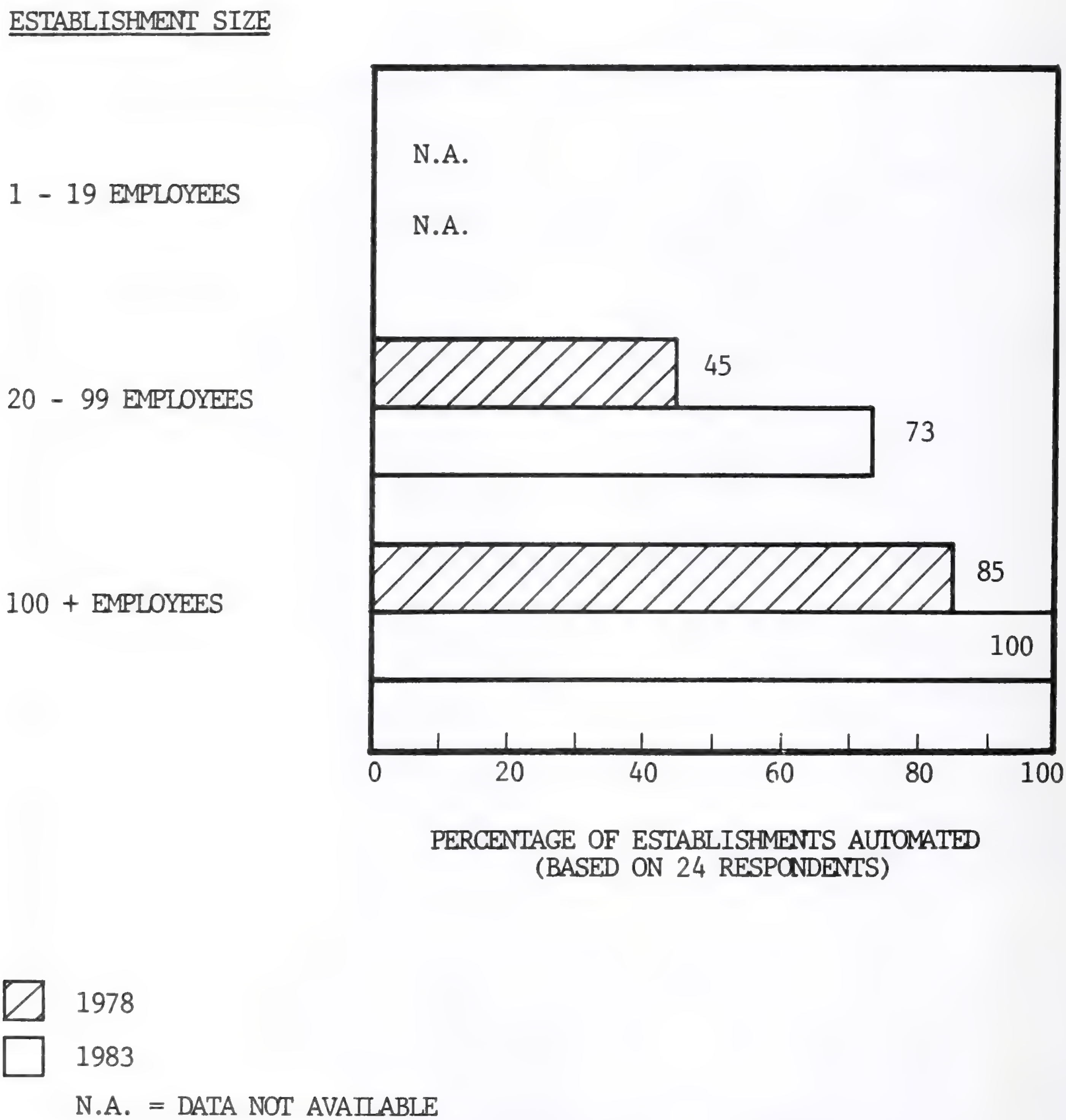


EXHIBIT V-194

JUNIOR COLLEGES: USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

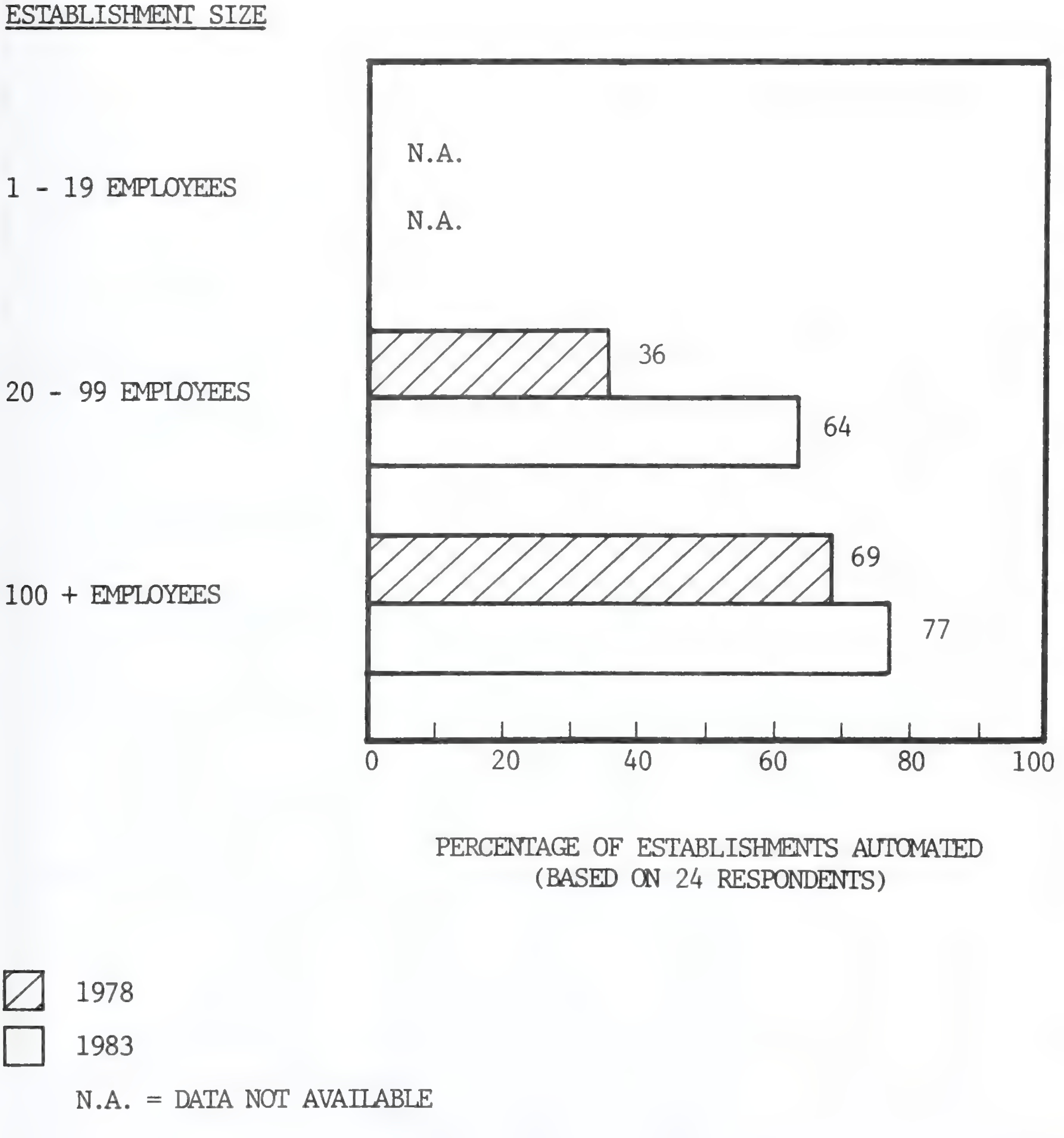


EXHIBIT V-195

JUNIOR COLLEGES: ADMINISTRATIVE/SALES APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=24)			BRANCHES		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-
FINANCE & ACCOUNTING						
Payroll	33%	67%	21%	N/A	N/A	N/A
Billing	33	67	21	-	-	-
Accounts Receivable	25	46	13	-	-	-
Accounts Payable	33	53	21	-	-	-
General Ledger	46	54	25	-	-	-
Other Finance	-	4	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.
N/A = Not Applicable

EXHIBIT V-196

JUNIOR COLLEGES:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS - INDEPENDENTS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES			20 - 99 EMPLOYEES (N=11)			100+ EMPLOYEES (N=13)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	N.A.	N.A.	N.A.	55%	45%	27%	15%	85%	15%
Billing	-	-	-	55	45	27	15	85	15
Accounts Receivable	-	-	-	36	18	9	15	69	15
Accounts Payable	-	-	-	45	45	27	22	77	15
General Ledger	-	-	-	82	18	36	15	85	15
Other Finance	-	-	-	-	-	-	-	8	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

N/A = Not Applicable
N.A. = Data Not Available

EXHIBIT V-197

JUNIOR COLLEGES:

INDUSTRY SPECIFIC APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N=24)			BRANCHES		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Student Scheduling	42%	50%	17%	N/A	N/A	N/A
Admission/ Registration	33	54	21	-	-	-
Student Records/ Grades	29	58	21	-	-	-
Attendance Accounting	38	54	17	-	-	-
CAI/Problem Solving	-	46	4	-	-	-

*On each question there was a varying percentage of 'No Responses.'' Therefore the sum of manual plus automated now may not equal 100%.
N/A = Not Applicable

EXHIBIT V-198

JUNIOR COLLEGES:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES			20 - 99 EMPLOYEES (N=11)			100+ EMPLOYEES (N=13)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Student Scheduling	N.A.	N.A.	N.A.	73%	27%	27%	15%	69%	8%
Admission/ Registration	-	-	-	55	36	36	15	69	8
Student Records/ Grades	-	-	-	45	45	36	15	69	8
Attendance Accounting	-	-	-	64	36	27	15	69	8
CAI/ Problem Solving	-	-	-	-	36	9	-	54	-

*On each question there was a varying percentage of "No Responses."
Therefore the sum of manual plus automated now may not equal 100%.
N.A. = Data Not Available

EXHIBIT V-199

JUNIOR COLLEGES:
EDP, OFFICE, AND COMMUNICATION NEEDS
(BY SIZE OF ESTABLISHMENT)

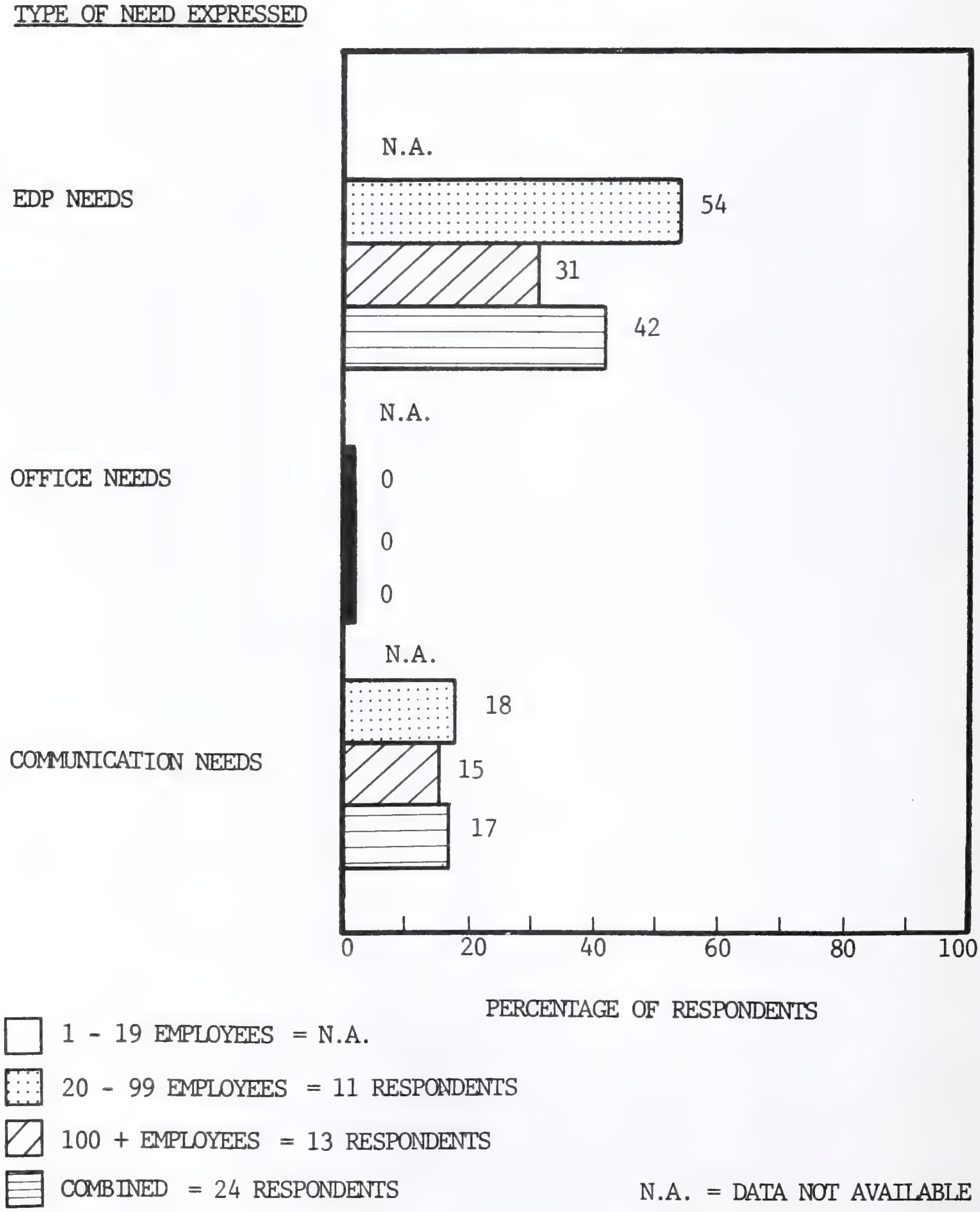


EXHIBIT V-200

TOTAL CURRENT EXPENDITURES
OF THE EDUCATIONAL SERVICES SECTOR

EXPENDITURE CLASSIFICATION	1 - 19 EMPLOYEES	20 - 99 EMPLOYEES	100 - 499 EMPLOYEES	TOTAL
EDP EQUIPMENT SERVICES, AND SUPPLIES	$ N.A.	$32.7M	$55.3M	$88M
OFFICE EQUIPMENT	$11.2M	$34.1M	$31.7M	$77M
COMMUNICATIONS EQUIPMENT AND SERVICES	$29.8M	$90.4M	$83.8M	$204M
TOTAL	$41.0M	$157.2M	$170.8M	$369M

N.A. = DATA NOT AVAILABLE

EXHIBIT V-201

AVERAGE CURRENT EXPENDITURES
OF THE EDUCATIONAL SERVICES SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$158	N/A
OFFICE EQUIPMENT	139	N/A
COMMUNICATIONS EQUIPMENT & SERVICES	368	N/A

N/A = NOT APPLICABLE

L. OTHER SERVICES

L. OTHER SERVICES

I. INDUSTRY CHARACTERISTICS

- The "other services" industry sector is characterized by a conglomeration of miscellaneous services that are difficult to describe as a single entity. The sub-sector selected for this report, the accounting group, is composed overwhelmingly of small establishments currently using and desiring more automated equipment and services. Penetration of both EDP equipment and services, as well as the use of word processing equipment, is far above the average for all small establishments. Further needs for equipment and services have been expressed by well over one-third of all respondents.

- The "other services" sector is comprised almost entirely of small establishments (see Exhibit V-202). Over 825,000 establishments, more than 99 percent of all establishments in the "other services" sector, have less than 500 employees, and altogether account for 7.4 million employees, second largest of all the sectors in this report. The industries contained in the "other services" sector are:

  - Hotels, motels, and other lodging places (SIC 70).

  - Personal services (SIC 72).

  - Business services (SIC 73).

  - Automotive repair, services, and garages (SIC 75).

  - Miscellaneous repair services (SIC 76).

  - Motion pictures (SIC 78).

- Amusement and recreation services (SIC 79).

- Legal services (SIC 81).

- Social services (SIC 83).

- Museums, art galleries, and botanical gardens (SIC 84).

- Membership organizations (SIC 86).

- Miscellaneous services (SIC 89).

- The industry subsector which is the focus of this section is the accounting industry, part of the miscellaneous services group (SIC 893).

- There are slight regional concentrations in the accounting industry, as shown in Exhibit V-203.

  - Thirty-one percent of all accounting firms are located in California, New York, and Texas.

- The accounting industry is dominated by privately held firms. The eight largest accounting firms, referred to as the "Big Eight," are all partnerships. These eight enterprises average 80 branches each, and collectively have sales over two billion dollars, or two-thirds of total accounting industry sales. Consequently they are treated as branch establishments in this report.

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

- Most establishments use their own EDP equipment. However, there are great differences between the smallest branches and independent locations (see Exhibit V-204):

- Respondents from branches of large partnerships with less than 20 employees stated that they use no EDP equipment, whereas ninety percent of respondents from independent establishments with less than 20 employees stated that they have EDP equipment installed.

- Approximately half of all respondents used computer services.

  - Thirty-three percent of all respondents from branches of large partnerships with less than 20 employees stated that they use or would consider using computer services. A common reason from branch respondents for not using computer services was access to a partnership owned computer (see Exhibit V-205).

  - Fifty percent of respondents from independent enterprises with less than 20 employees were using computer services and an additional 20 percent would consider using services (see Exhibit V-206).

- EDP penetration in the accounting industry is near 100 percent (see Exhibit V-207).

  - Seventy-seven percent of respondents from establishments with less than 20 employees and 100 percent of respondents from establishments with more than 100 employees used EDP equipment or services.

- There is very wide acceptance of automated office equipment in the accounting industry. Almost half of all respondents were using word processing equipment (see Exhibit V-208).

  - Sixty-seven percent of respondents from establishments with more than 100 employees stated that they use automated office equipment.

  - This is the highest level of penetration of word processing among all industries interviewed.

- Eighty percent of all respondents used on-premises communications switching equipment (keyset or PABX - see Exhibit V-209).

- As might be expected since independent accounting firms are almost always local or regional, there are wide disparities in usage of communications services between branches and independents (see Exhibit V-210). For example, thirty-five percent of branch locations used TWX or Telex, but no respondents from independent establishments had TWX or Telex installed.

- Most respondents stated use of telephone company-supplied equipment, but 22 percent of medium and large-sized respondents used interconnect communications equipment. There are no obvious distinctions between branches and independents in the use of interconnect equipment (see Exhibit V-211).

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-212 and V-213 show that respondents use EDP somewhat more for administrative functions than for industry specific functions.

    - Seventy-seven percent of establishments with less than 20 employees used EDP for administrative functions. Only 46 percent of respondents from establishments with less than 20 employees cited EDP applications for industry specific functions.

    - By 1983, 85 percent of the smallest respondent establishment will be using EDP for administrative functions, and 62 percent of respondents

will be using EDP for industry specific applications. However, little growth is planned in either of these areas for establishments over 20 employees.

- Accounting establishments used EDP very heavily for administrative applications (see Exhibit V-214).

  - Seventy-eight to eighty-one percent of independent locations were using EDP for payroll, billing, accounts receivable, accounts payable, general ledger. Three percent of respondents from independent locations have plans to add all administrative applications.

  - Ninety-one percent of "Big Eight" branch locations were using EDP for administrative applications.

  - One hundred percent of both branch and independent locations with more than 100 employees used EDP for all administrative applications, but smaller locations are not as automated (see Exhibits V-215 and V-216).

- The most frequent use of EDP in an industry specific application is for auditing, although less than half of all respondents report using EDP for this application (see Exhibit V-217).

- Less than one-fourth of all respondents have automated their own client accounting, the second most common industry specific application:

  - Sixteen percent of all independents have automated client accounting.

  - Twenty-six percent of all branches have automated this application.

- There are wide disparities in EDP usage for industry specific applications among the smallest branches and independents. No branches with less than 20 employees used EDP for industry specific applications (see Exhibit V-218), but

60 percent of respondents from independent enterprises with less than 20 employees stated that they use EDP for audit (see Exhibit V-219).

- In general, there are few plans to automate any additional applications in the next five years.

4. EDP, OFFICE AND COMMUNICATION NEEDS

- In the accounting industry, almost half of all respondent establishments stated further needs for EDP, office, and communications equipment and services (see Exhibit V-220):

  - Thirty-seven percent of respondents expressed further EDP needs.

  - Forty-eight percent of respondents expressed further office needs.

  - Forty-one percent of respondents expressed further communications needs.

- EDP needs were expressed predominantly by large establishments. Many needs expressed were for multi-function capabilities, reflecting the nature of functions performed by accountants -- essentially all paperwork. Some needs expressed were:

  - "Word processing software package for computers."

  - "Equipment to handle word processing and computing."

  - "Terminal for word processing and computing."

- Office needs were expressed by over half of all establishments with more than 20 employees:

- Sixty-six percent of respondents from establishments with more than 100 employees expressed office needs.

- Many needs expressed were for inexpensive word processing equipment.

- Communications needs were expressed by more than 30 percent of all sizes of establishments, and strongly emphasized the desire to reduce costs while increasing capacity and flexibility.

5. EXPENDITURES

- The rate of expenditure per employee for the accounting group is the third highest of any sector (see Exhibit V-221). The annual rates are:

  - For EDP equipment, services, and supplies, $234 per employee.

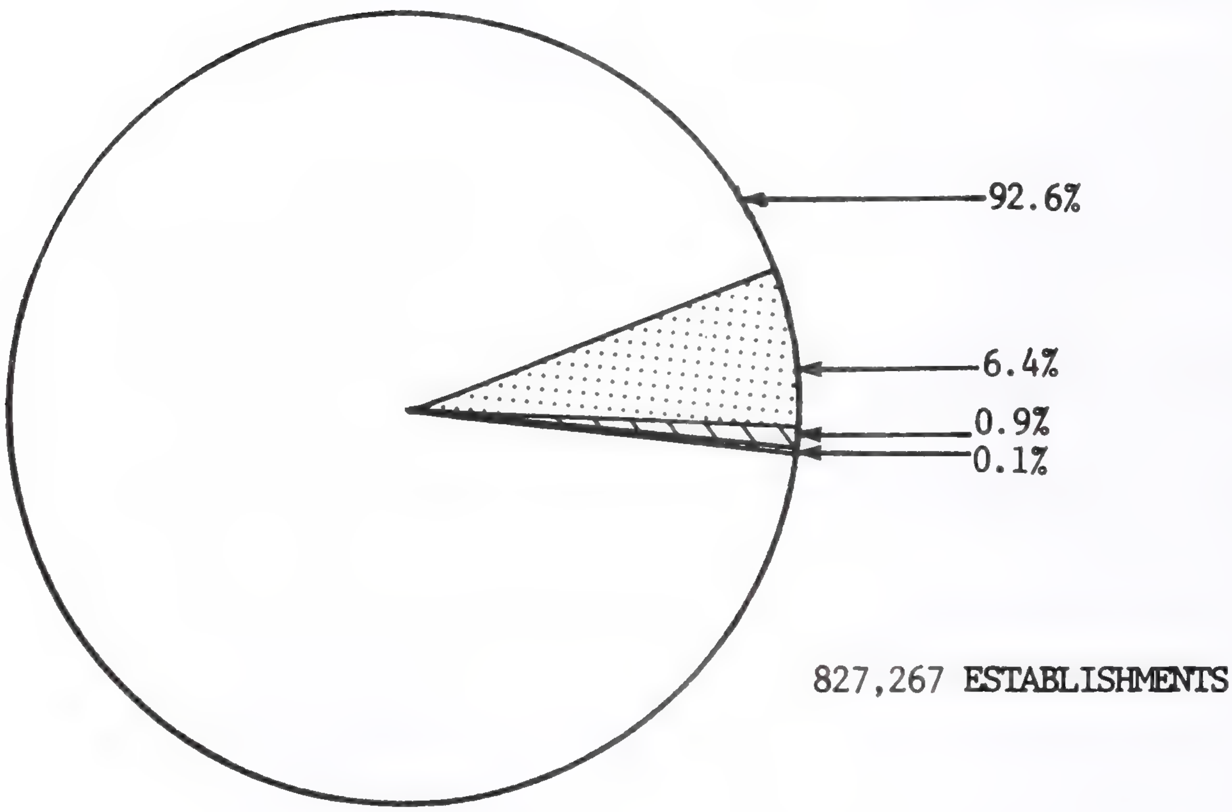
  - For office equipment, $205 per employee.

  - For communications equipment and services, $541 per employee.

EXHIBIT V-202

STRUCTURE OF THE "OTHER SERVICES" AND ACCOUNTING, AUDITING, AND BOOKKEEPING SERVICES INDUSTRIES (BY SIZE OF ESTABLISHMENT, 1975)

OTHER SERVICES
(SIC 70,72,73,75,76,78,79,81,84,86,89)



ACCOUNTING, AUDITING, AND BOOKKEEPING SERVICES
(SIC 893)

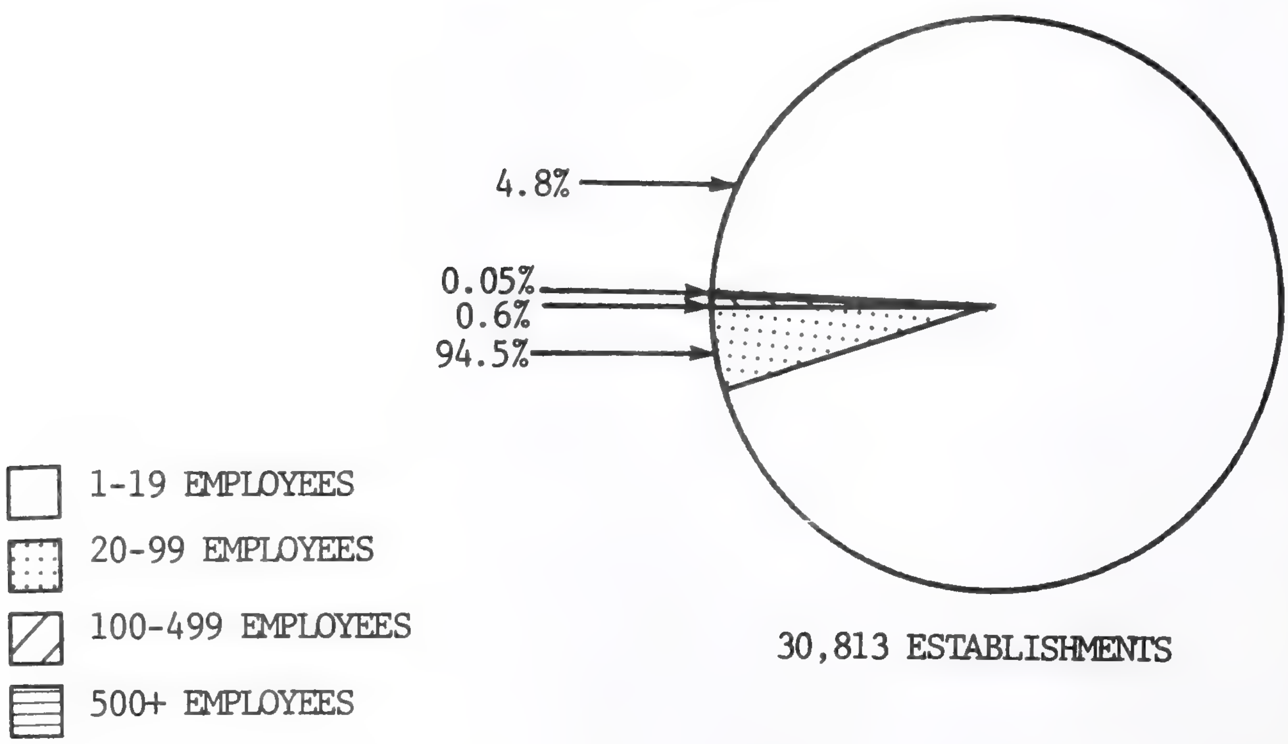


EXHIBIT V-203

DISTRIBUTION OF ACCOUNTING FIRM ESTABLISHMENTS
(BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	418	1.4 %	MT	159	0.5 %
AK	79	0.3	NE	221	0.7
AZ	445	1.5	NV	125	0.4
AR	293	0.9	NH	121	0.4
CA	4441	14.4	NJ	992	3.2
CO	600	2.0	NM	212	0.7
CT	455	1.5	NY	2950	9.6
DE	67	0.2	NC	658	2.1
DC	113	0.4	ND	82	0.3
FL	1383	4.5	OH	1278	4.1
GA	668	2.2	OK	492	1.6
HI	169	0.5	OR	471	1.5
ID	153	0.5	PA	1277	4.1
IL	1356	4.4	RI	148	0.5
IN	586	1.9	SC	311	1.0
IA	339	1.1	SD	78	0.3
KS	309	1.0	TN	477	1.6
KY	335	1.1	TX	1946	6.3
LA	476	1.6	UT	215	0.7
ME	128	0.4	VT	50	0.2
MD	460	1.5	VA	464	1.5
MA	815	2.6	WA	540	1.8
MI	1124	3.6	WV	199	0.6
MN	564	1.8	WI	510	1.6
MS	270	0.9	WY	96	0.3
MO	679	2.2			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				30,797	100.0 %

EXHIBIT V-204

ACCOUNTING FIRMS:
EDP EQUIPMENT INSTALLED (BY TYPE AND SIZE OF ESTABLISHMENT)

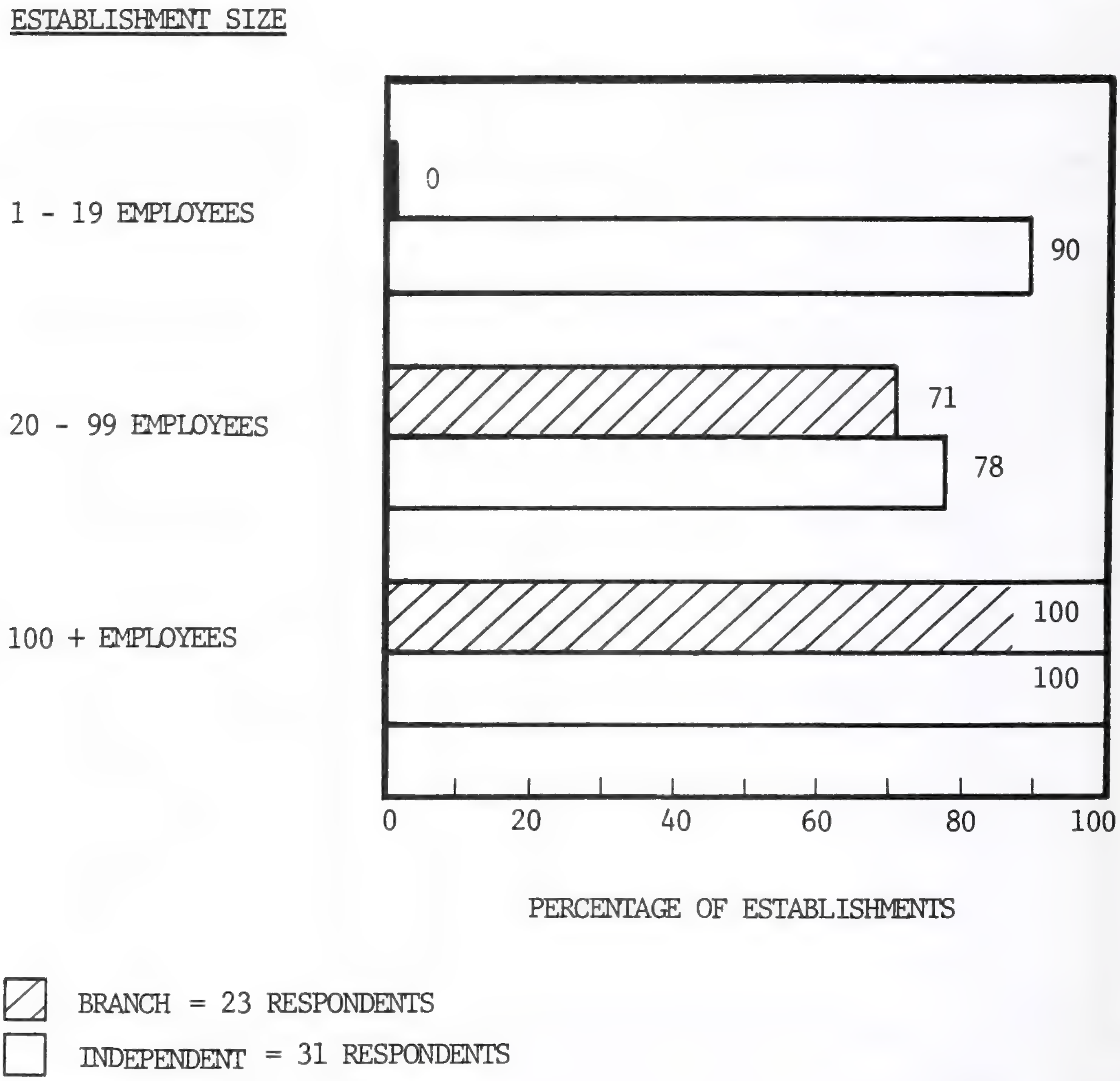


EXHIBIT V-205

ACCOUNTING FIRMS:
USE OF COMPUTER SERVICES - BRANCHES

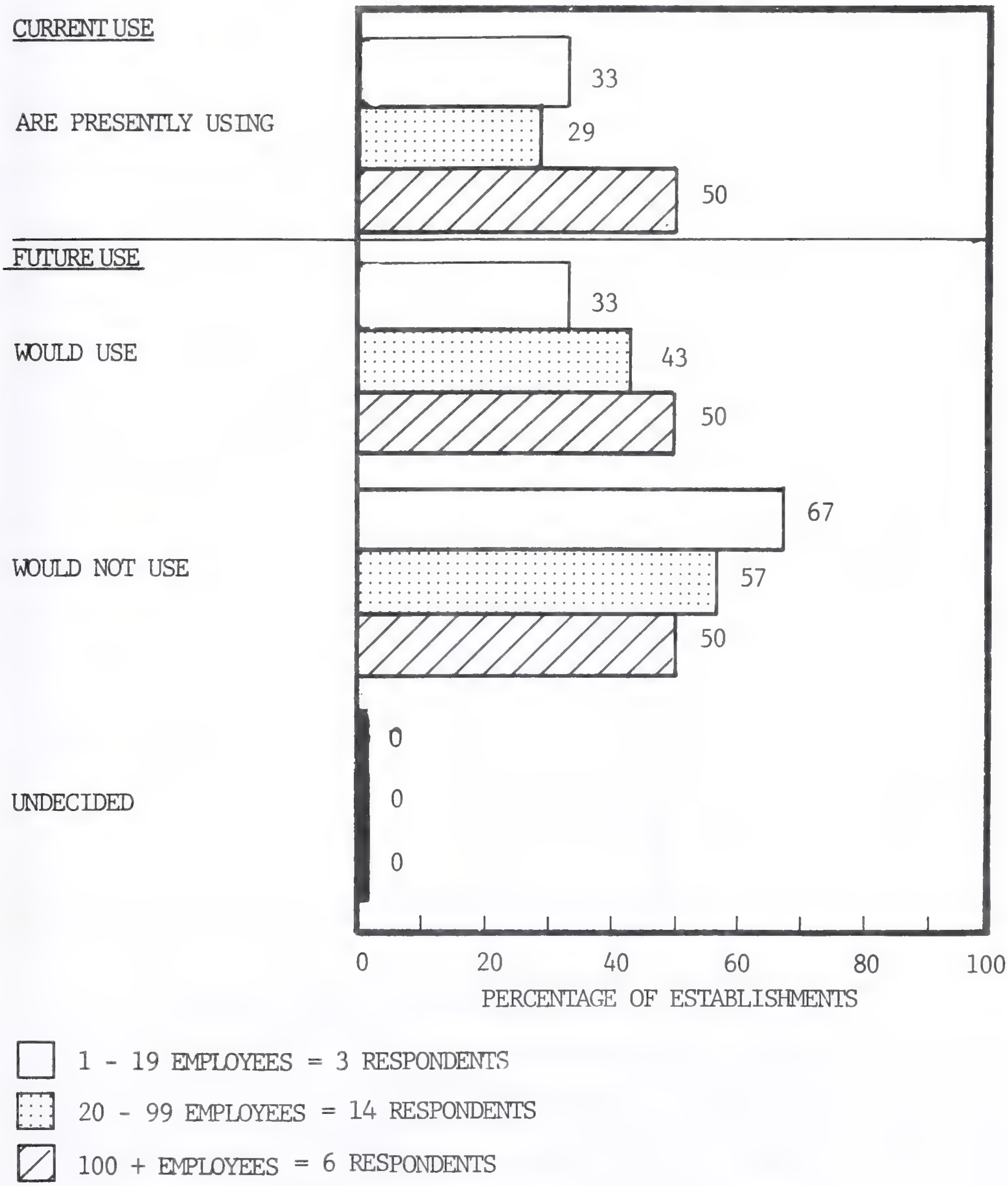


EXHIBIT V-206

ACCOUNTING FIRMS:
USE OF COMPUTER SERVICES - INDEPENDENTS

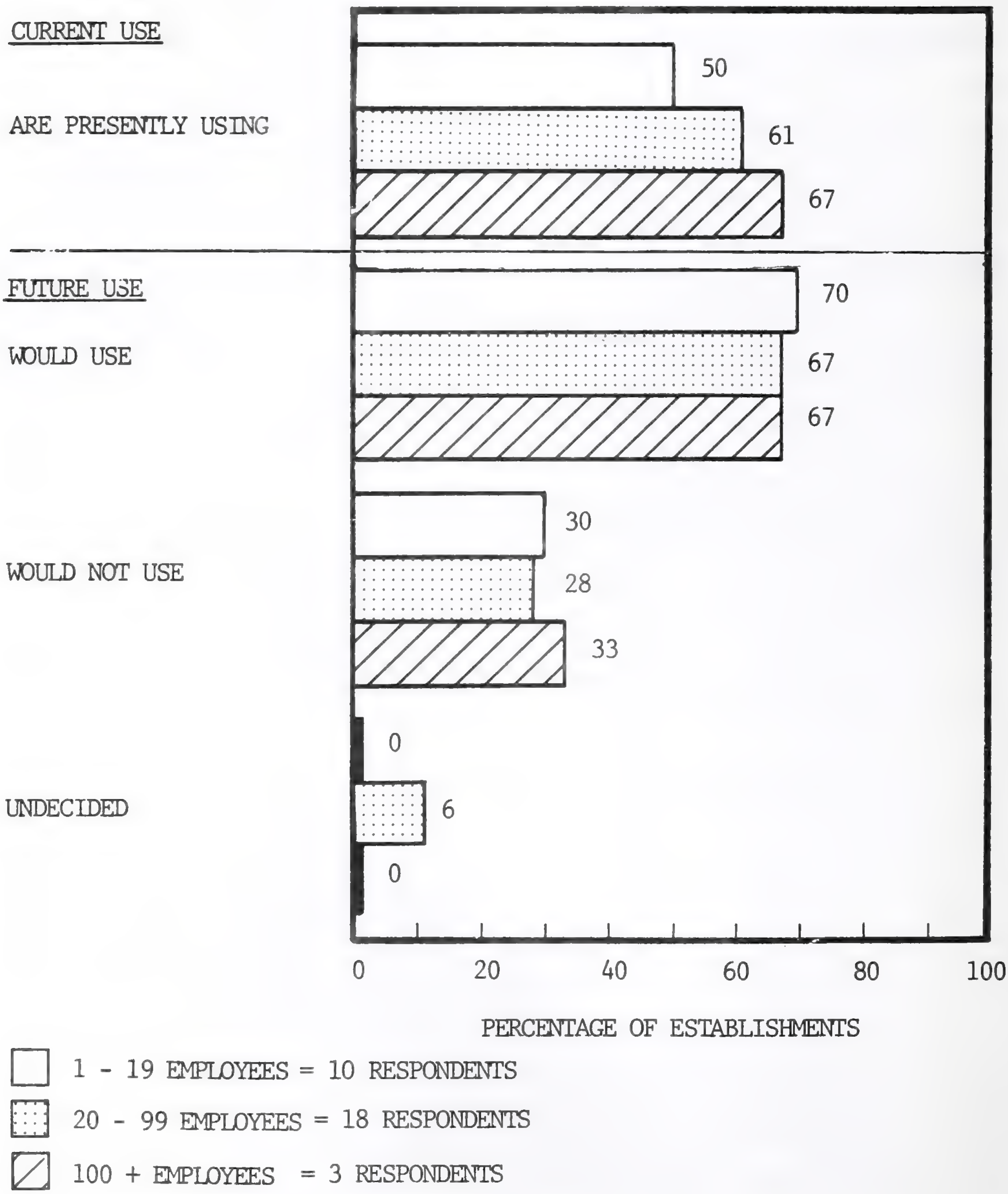


EXHIBIT V-207

ACCOUNTING FIRMS: PENETRATION OF EDP EQUIPMENT/SERVICES (BY SIZE OF ESTABLISHMENT)

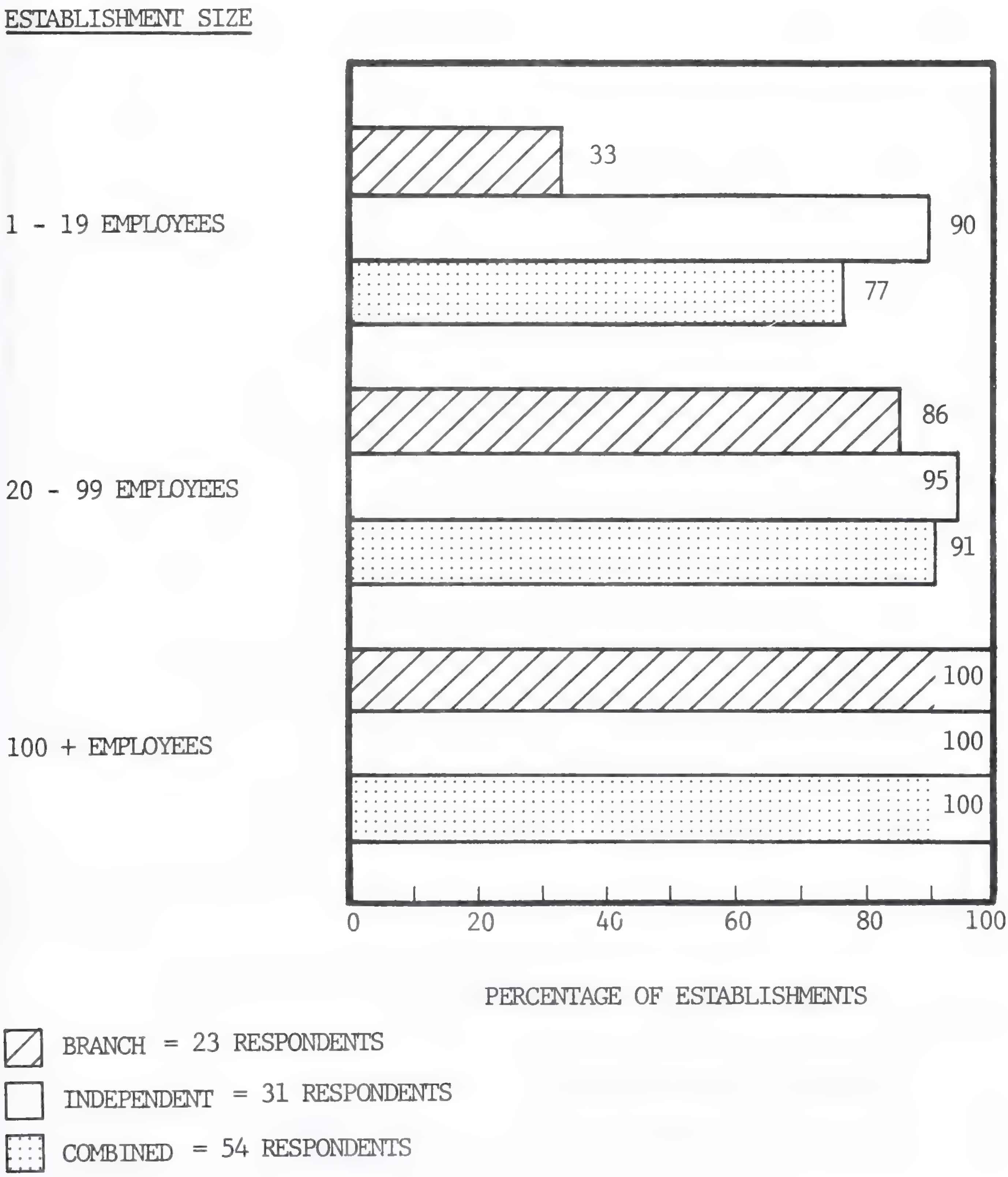


EXHIBIT V-208

ACCOUNTING FIRMS: USERS OF OFFICE AUTOMATION
(BY SIZE OF ESTABLISHMENT)

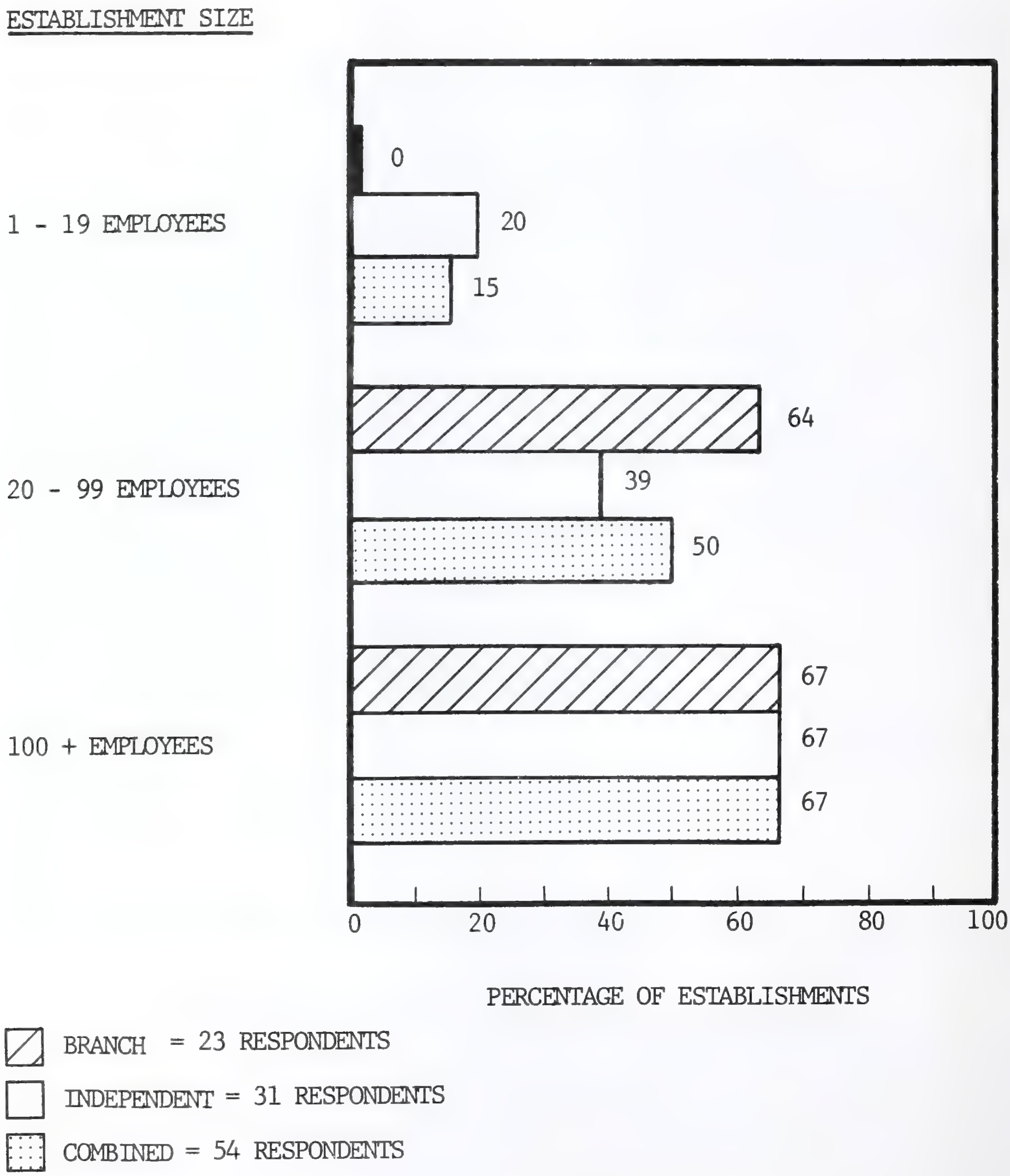


EXHIBIT V-209

ACCOUNTING FIRMS: COMMUNICATIONS EQUIPMENT INSTALLED - BRANCHES AND INDEPENDENTS

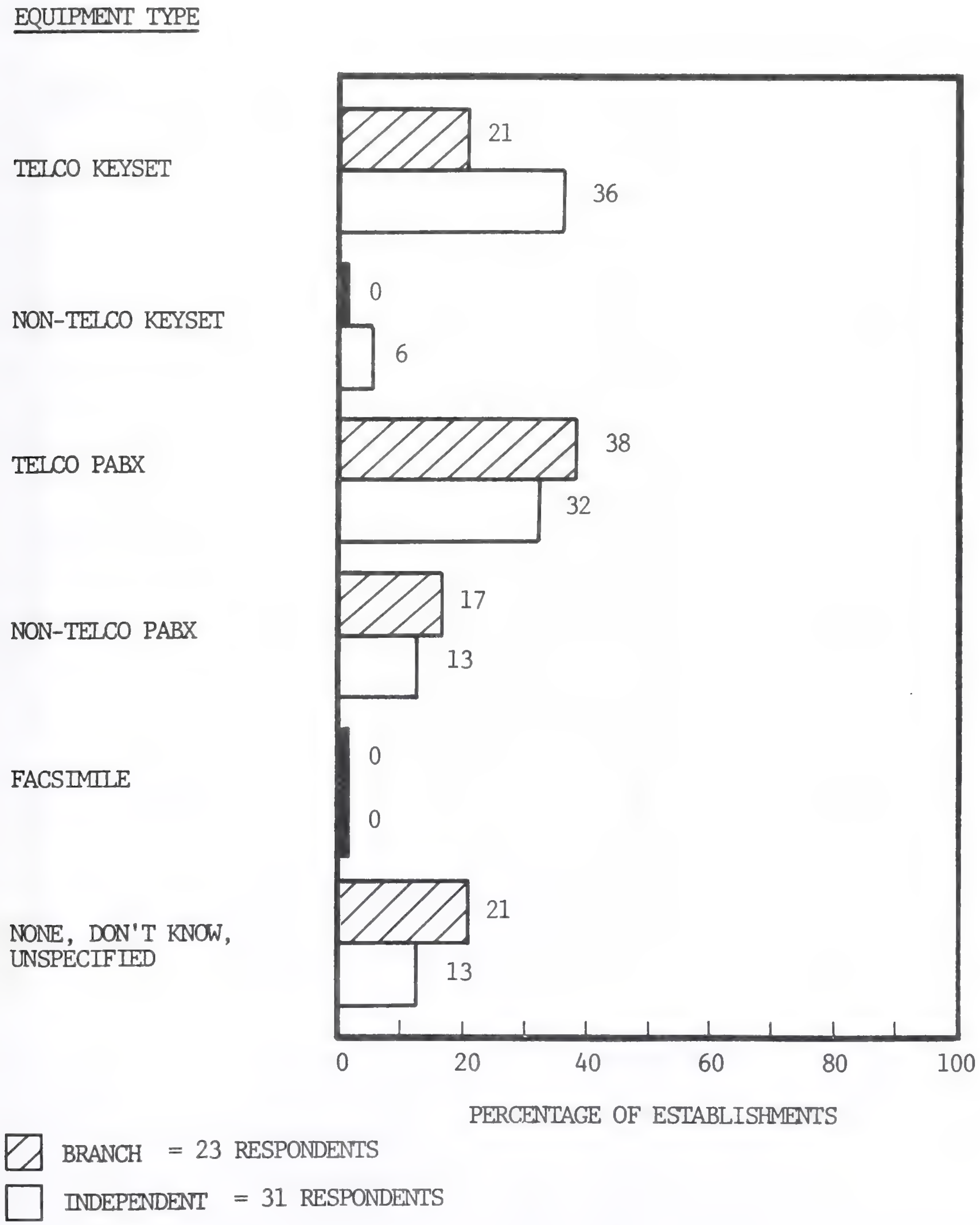


EXHIBIT V-210

ACCOUNTING FIRMS: COMMUNICATIONS SERVICES INSTALLED - BRANCHES AND INDEPENDENTS

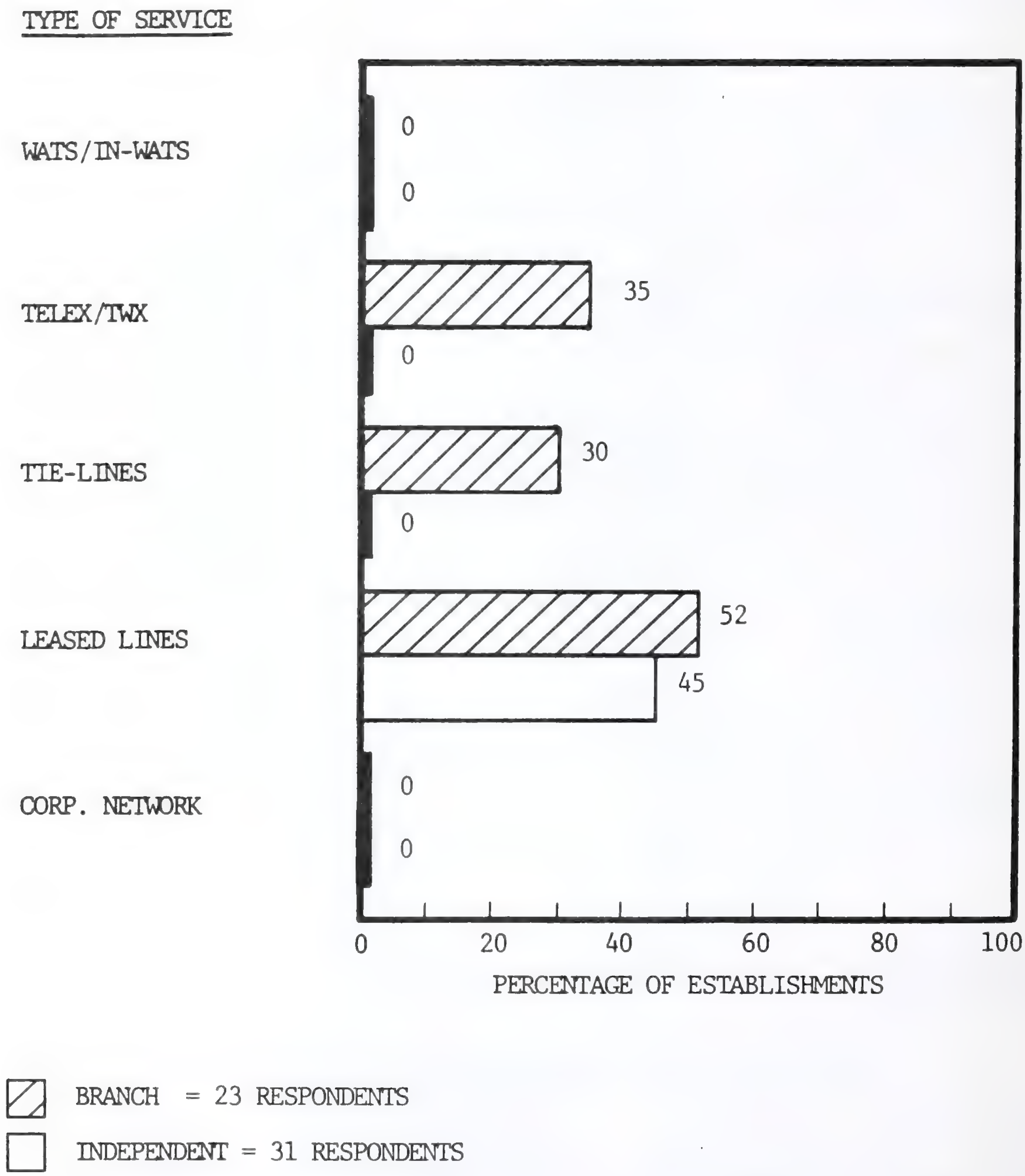


EXHIBIT V-211

ACCOUNTING FIRMS: USERS OF NON-TELCO COMMUNICATIONS EQUIPMENT/SERVICES (BY SIZE OF ESTABLISHMENT)

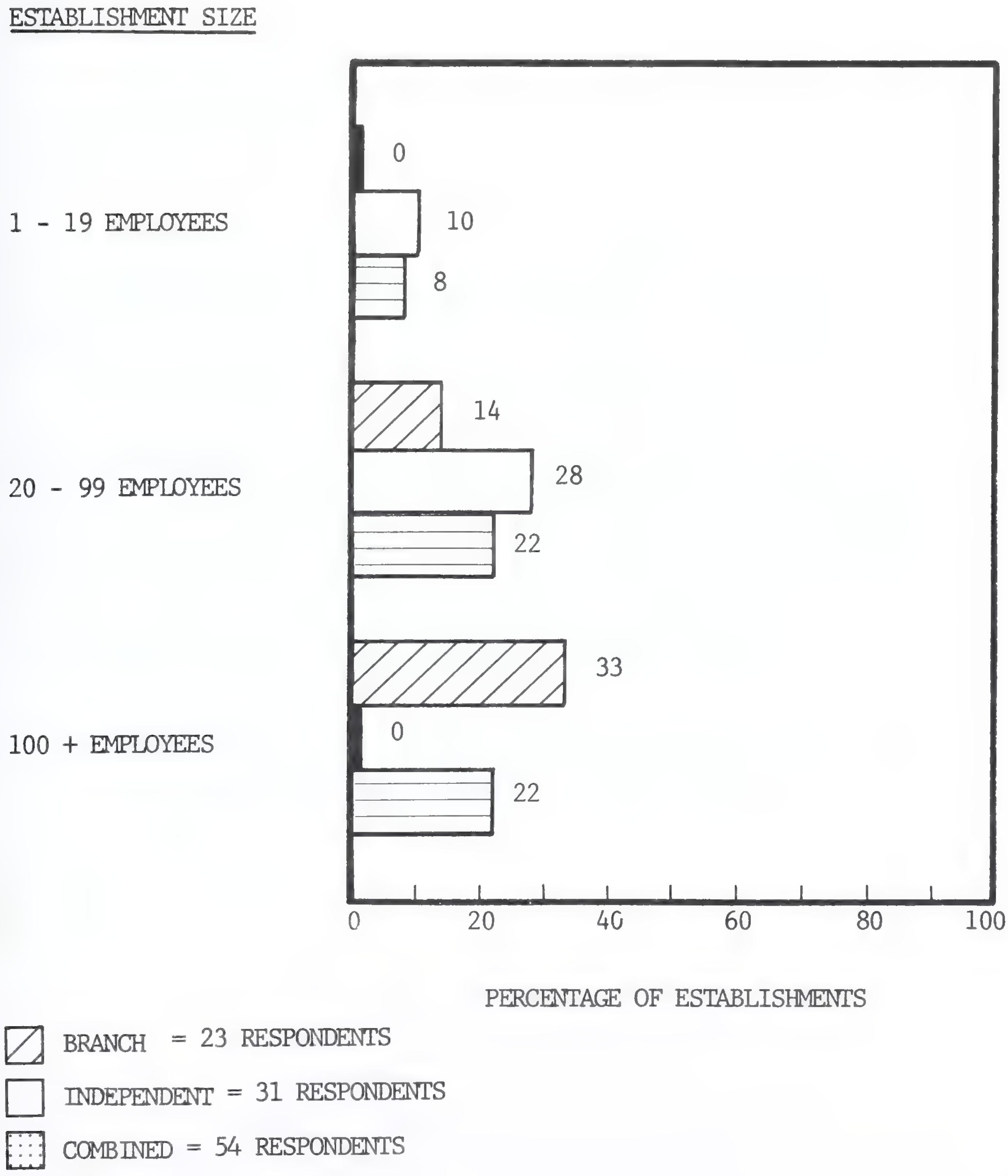


EXHIBIT V-212

ACCOUNTING FIRMS: USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

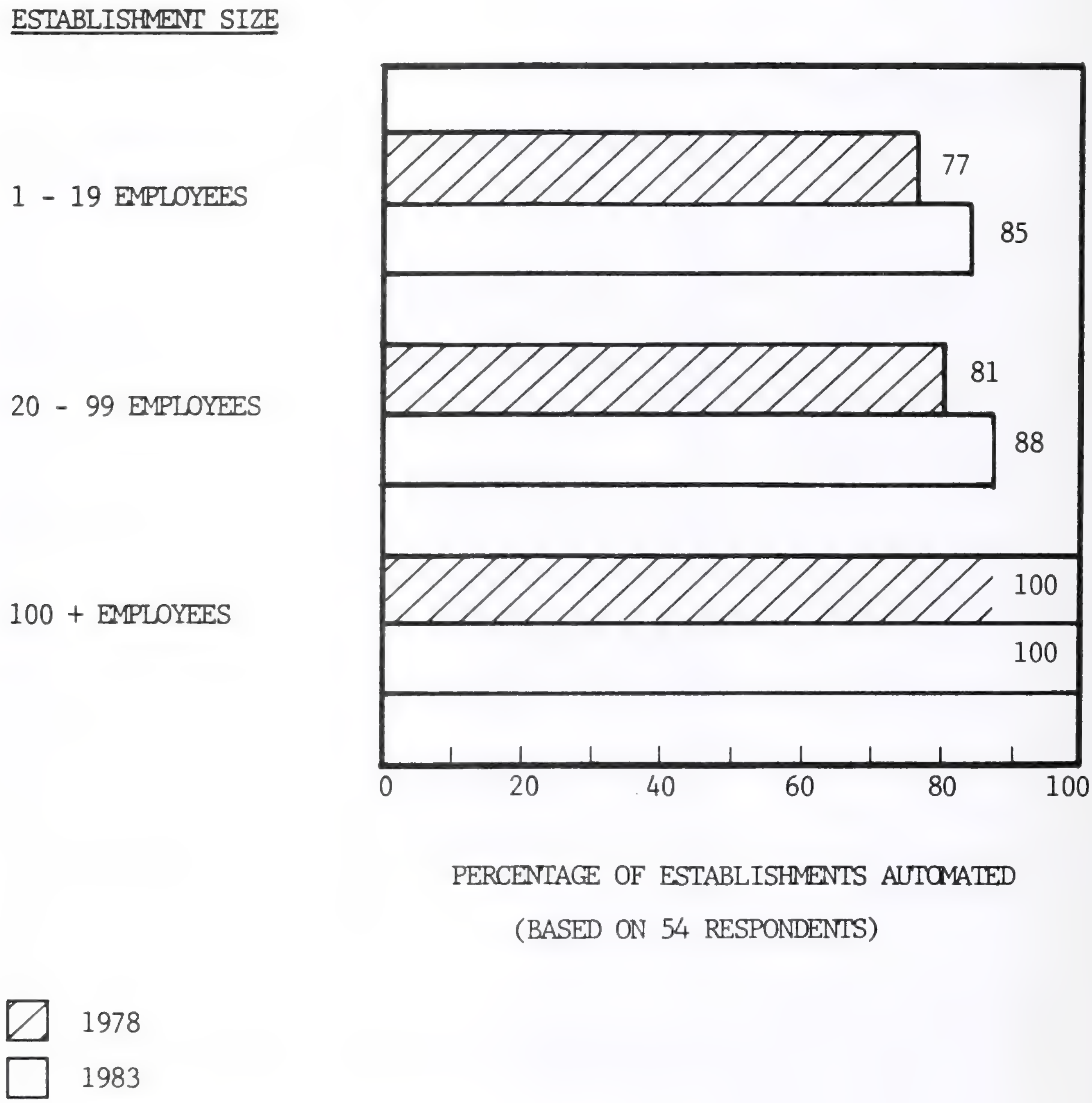


EXHIBIT V-213

ACCOUNTING FIRMS: USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978/1983 (BY SIZE OF ESTABLISHMENT)

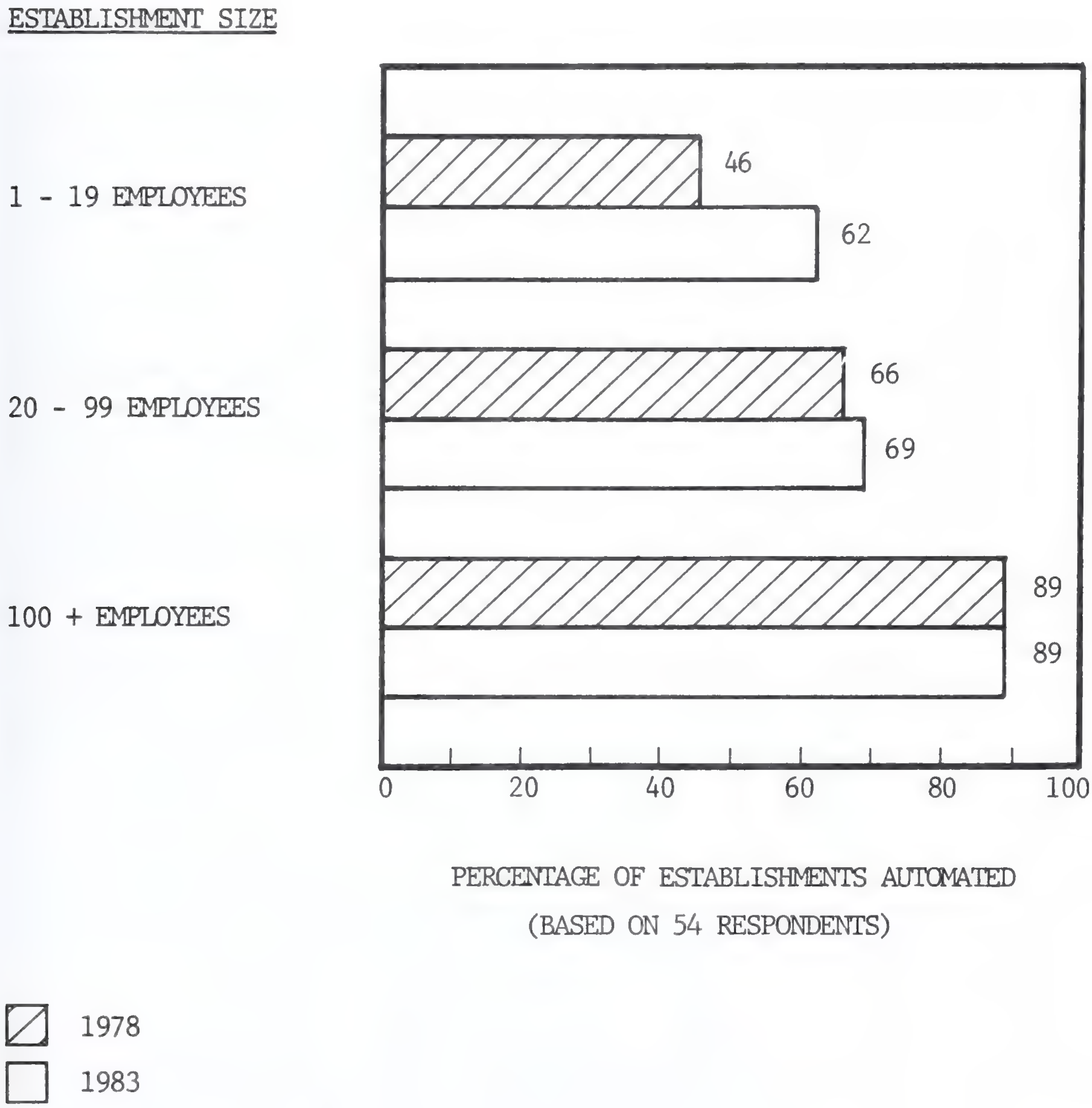


EXHIBIT V-214

ACCOUNTING FIRMS:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N = 31)			BRANCHES (N = 23)		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-
FINANCE & ACCOUNTING						
Payroll	3 %	81%	3 %	-	91%	-
Billing	3	78	3	-	91	-
Accounts Receivable	3	81	3	-	91	-
Accounts Payable	3	78	3	-	91	-
General Ledger	3	81	3	-	91	-
Other Finance	-	-	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.
N/a = Not Applicable

EXHIBIT V-215

ACCOUNTING FIRMS:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS - BRANCHES

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N=3)			20 - 99 EMPLOYEES (N=14)			100 + EMPLOYEES (N=6)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	-	66	-	-	93	-	-	100	-
Billing	-	66	-	-	93	-	-	100	-
Accounts Receivable	-	66	-	-	93	-	-	100	-
Accounts Payable	-	66	-	-	93	-	-	100	-
General Ledger	-	66	-	-	93	-	-	100	-
Other Finance	-	-	-	-	-	-	-	-	-

*On each question there was a varying percentage of 'No Responses.'' Therefore the sum of manual plus automated now may not equal 100%.
N/A= Not Applicable

EXHIBIT V-216

ACCOUNTING FIRMS:

ADMINISTRATIVE/SALES APPLICATION ANALYSIS - INDEPENDENTS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 10)			20 - 99 EMPLOYEES (N = 18)			100 + EMPLOYEES (N = 3)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	20	80	10	22	78	5	-	100	-
Billing	30	70	10	22	78	5	-	100	-
Accounts Receivable	20	80	10	22	78	5	-	100	-
Accounts Payable	30	70	10	22	78	5	-	100	-
General Ledger	20	80	10	22	78	5	-	100	-
Other Finance	-	-	-	-	-	-	-	-	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.
N/A = Not Applicable

EXHIBIT V-217

ACCOUNTING FIRMS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	INDEPENDENTS (N = 31)			BRANCHES (N = 23)		
	Manual	Automated Now	Automated In5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Client Accounting	84%	16%	-	-	26%	-
Audit	61	39	6	57	43	-
Tax Returns	-	10	-	-	4	-
Staff Assistance	-	3	-	-	4	-
Management Info. Sys.	-	3	-	-	4	-
Service Bureau	-	10	-	-	9	-
Timekeeping	-	13	-	-	9	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-218

ACCOUNTING FIRMS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - BRANCHES

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 3)			20 - 99 EMPLOYEES (N = 14)			100 + EMPLOYEES (N = 6)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Client Accounting	-	0	-	-	21%	-	-	50%	-
Audit	-	0	-	-	43	-	-	67	-
Tax Returns	-	0	-	-	-	-	-	17	-
Staff Assistance	-	0	-	-	-	-	-	17	-
Management Info. Systems	-	0	-	-	-	-	-	17	-
Service Bureau	-	0	-	-	7	-	-	33	-
Timekeeping	-	0	-	-	7	-	-	17	-

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-219

ACCOUNTING FIRMS:
INDUSTRY SPECIFIC APPLICATION ANALYSIS - INDEPENDENTS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 10)			20 - 99 EMPLOYEES (N = 18)			100 + EMPLOYEES (N = 3)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Client Accounting	90%	10%	-	83%	17%	-	67%	33%	-
Audit	40	60	20	78	22	6	67	33	-
Tax Services	100	-	-	89	11	-	67	33	-
Staff Assistance	-	-	-	-	-	-	-	-	-
Management Info. Systems	-	-	-	-	-	-	-	-	-
Service Bureau	-	-	-	-	-	-	-	-	-
Timekeeping	-	-	-	-	17	-	-	-	-

*On each question there was a varying percentage of 'No Responses.''
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-220

ACCOUNTING FIRMS:
EDP, OFFICE, AND COMMUNICATION NEEDS (BY SIZE OF ESTABLISHMENT)

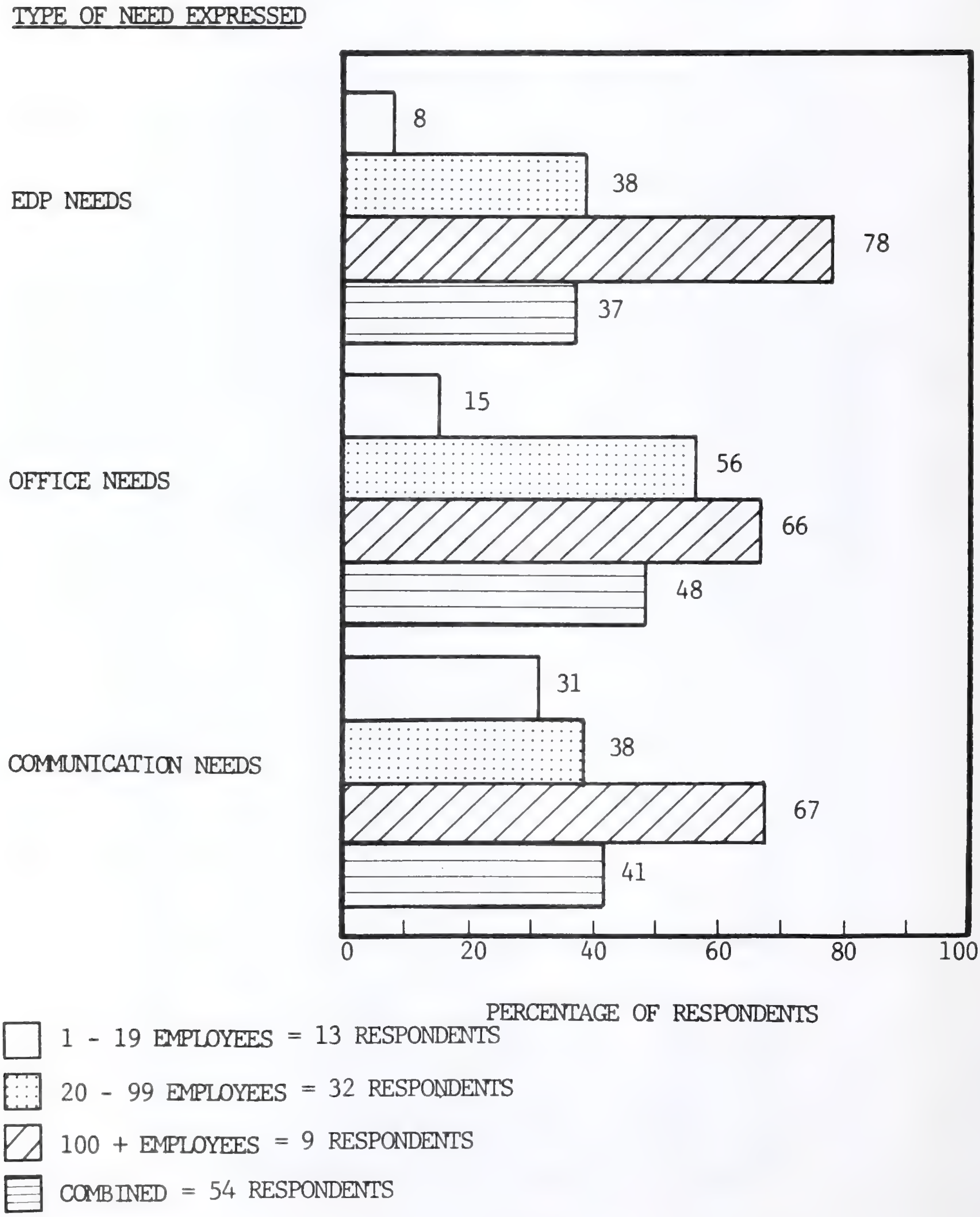


EXHIBIT V-221

AVERAGE CURRENT EXPENDITURES OF THE ACCOUNTING SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$ 234	N.A.
OFFICE EQUIPMENT	205	N.A.
COMMUNICATIONS EQUIPMENT & SERVICES	541	N.A.

N.A. = DATA NOT AVAILABLE

M. GOVERNMENT

M. GOVERNMENT

I. INDUSTRY CHARACTERISTICS

- The "state and local government" sector is characterized by relatively low levels of use of EDP equipment, average use of computer services and word processing equipment, and no reported use of interconnect communications equipment at all. There are strong and inconsistent differences between state and local governments, and needs were expressed by proportionately more very small establishments than by the medium or large employee size groups.

- The "local government" portion of the sector is comprised almost entirely of small establishments (see Exhibit V-222). Over 150,000 establishments, more than 98 percent of all establishments in the "local government " sector, have less than 500 employees. Of these 150,000, some 62,000 comprise the group commonly thought of as local government, i.e., municipalities, counties, towns, and villages. The bulk of the other 90,000 entities are school districts.

- State and local governments together account for more than 4.5 million employees.

- The component groups contained in the "government" sector are:

  - Executive, legislative, and general government, except finance (SIC 91).

  - Police and fire protection (SIC 922).

  - Financial administration and general control (SIC 931).

  - Public education (SIC 941).

  - Public health (SIC 943).

- Public welfare (SIC 944).

- Sanitation (SIC 95, part).

- Local utilities (SIC 963, part).

- Small establishments of this sector spend almost $3 billion annually on equipment and services, including:

  - EDP equipment.

  - EDP services.

  - Office equipment.

  - Communications equipment.

  - Communications services.

  - Supplies.

- The industry subsector which is the focus of this section is state and local government. Separate locations and departments of state government which fit the small establishment size categories are treated as branches, and local governments (excluding school districts) are treated as independents. However, no local governments with less than 20 employees were interviewed.

- There are unusual, but isolated regional concentrations in the distribution of local governments, as shown in Exhibit V-223.

  - Illinois has eight percent and Kansas has five percent of all small local governments, more than either California or New York with four percent each.

- However, almost 40 percent of government establishments are in the north central United States.

2. USE OF EDP, OFFICE, AND COMMUNICATIONS AUTOMATION

- Less than half of all establishments have EDP equipment installed. However, there are great differences between branches of state governments and independent local government locations (see Exhibit V-224):

  - Half of respondents from branches of state governments with less than 100 employees stated that they use EDP equipment, whereas only 25 percent of respondents from local governments with less than 100 employees stated that they have EDP equipment installed.

  - The ratio is reversed for the larger size group, where 33 percent of state branches versus 60 percent of local governments have EDP equipment installed.

- Few state branches say they are currently using computer services (see Exhibit V-225). But use of services is quite popular among local governments, including 33 percent by respondents with more than 100 employees, and 50 percent of those with 20-99 employees (see Exhibit V-226).

  - A common reason from branch respondents for not using computer services was access to a state owned computer.

- EDP penetration is relatively low for state and local governments, although local governments with more than 20 employees are more than 70 percent users of computer equipment or services (see Exhibit V-227).

  - Only 33 percent of state government respondents with more than 100 employees used EDP equipment or services.

- A common reason reported by state branches for not using EDP was that all EDP applications are performed at a centralized location.

- There is wide acceptance of automated office equipment in state governments, but no respondents from independent local governments reported using any word processing equipment (see Exhibit V-228):

  - "Lack of needs" was a common reason for not using automated office equipment.

- Forty-seven percent of all respondents used on-premises keyset communications equipment, and 46 percent had a PABX installed (see Exhibit V-229).

- There are extremely wide disparities in usage of communications services between state and local governments (see Exhibit V-230):

  - Only branch locations of state governments had any communications services other than DDD installed.

  - All of the listed services had some users among state governments, but WATS lines were installed at least three times as frequently as any other type of service.

- All respondents stated use of telephone company-supplied equipment, rather than interconnect equipment.

3. EDP APPLICATIONS

- Figures cited in the following exhibits represent the percentage of respondents who responded affirmatively to the question of whether they were performing a specific function in a manual or automated way, and if manually, whether they expected the function to be automated within five years. Since some respondents who were uncertain or who do not perform the function at their establishment declined to answer, the sum of "manual" plus "automated now" does not necessarily equal 100 percent.

- Exhibits V-231 and V-232 show that respondents use EDP twice as much for financial/administrative functions as for industry specific functions:

  - Overall, 76 percent of respondents used EDP for administrative functions. Only 41 percent of respondents cited EDP applications for industry specific functions.

  - Plans to add new applications by 1983 were cited only by establishments with more than 100 employees.

- Differences in use of EDP for administrative applications reflect the differences in scope of responsibilities between the state and local level of government (see Exhibit V-233):

  - Eighty-nine percent of respondents from independent local governments cited usage of EDP for billing, compared to 32 percent of state branches.

  - In general, differences between state branches and independent local governments are more significant than differences between sizes of establishment (see Exhibits V-234 and V-235).

- Differences between state and local governments are most apparent in their respective use of EDP for industry specific applications (see Exhibit V-236):

- Almost no respondents from branches of state governments cited EDP usage for industry specific functions (see Exhibit V-237).

- For independent local governments clearly the most important applications are those concerned with revenue collection and accounting (see Exhibit V-238).

- As usual, the larger establishments have many more applications automated than smaller establishments do.

- In general, there are few plans by any group to automate additional applications in the next five years.

4. EDP, OFFICE AND COMMUNICATION NEEDS

- Contrary to the usual pattern, state and local government establishments expressed further needs for EDP and office equipment in an inverse relationship to their size (see Exhibit V-239).

  - Seventy-five percent of the smallest size group of respondents expressed further EDP needs.

  - Forty-four percent of medium sized respondents and 33 percent of larger size establishments expressed further EDP needs.

  - The same pattern occurred for office needs, but at levels of 25, 19, and 10 percent respectively.

  - Approximately 10 percent of respondents have communications needs, but these are all among the larger establishments.

- EDP needs in this sector are largely a function of outgrowing existing capabilities; for example:

- "Not enough core storage to add modems and data lines."

- "Need new equipment."

- "Changing from keypunch batch system to an on-line system."

- "Adding word processing functions."

- Office needs were expressed predominantly by branches of state governments. Many needs expressed were for inexpensive word processing equipment. Comments from respondents included:

  - "Need a word processor to help with paperwork."

  - "Will purchase a new word processor."

- Communications needs also related to the growth of these government agencies and the resulting need for more capacity. Specific comments included desires for:

  - "A switching system other than a regular switchboard."

  - "Purchase of a switchboard."

5. EXPENDITURES

- Expenditures for EDP, office and communications equipment and services were over almost $3 billion annually by small establishments of state and local government as shown in Exhibits V-240 and V-241. Over 38 percent of expenditures for automated equipment, services, and supplies were from establishments with less than 100 employees. This level and rate of expenditure places state and local governments among the average range for all sectors:

- Annual expenditures for EDP equipment, services and supplies were $689 million or $153 per employee.

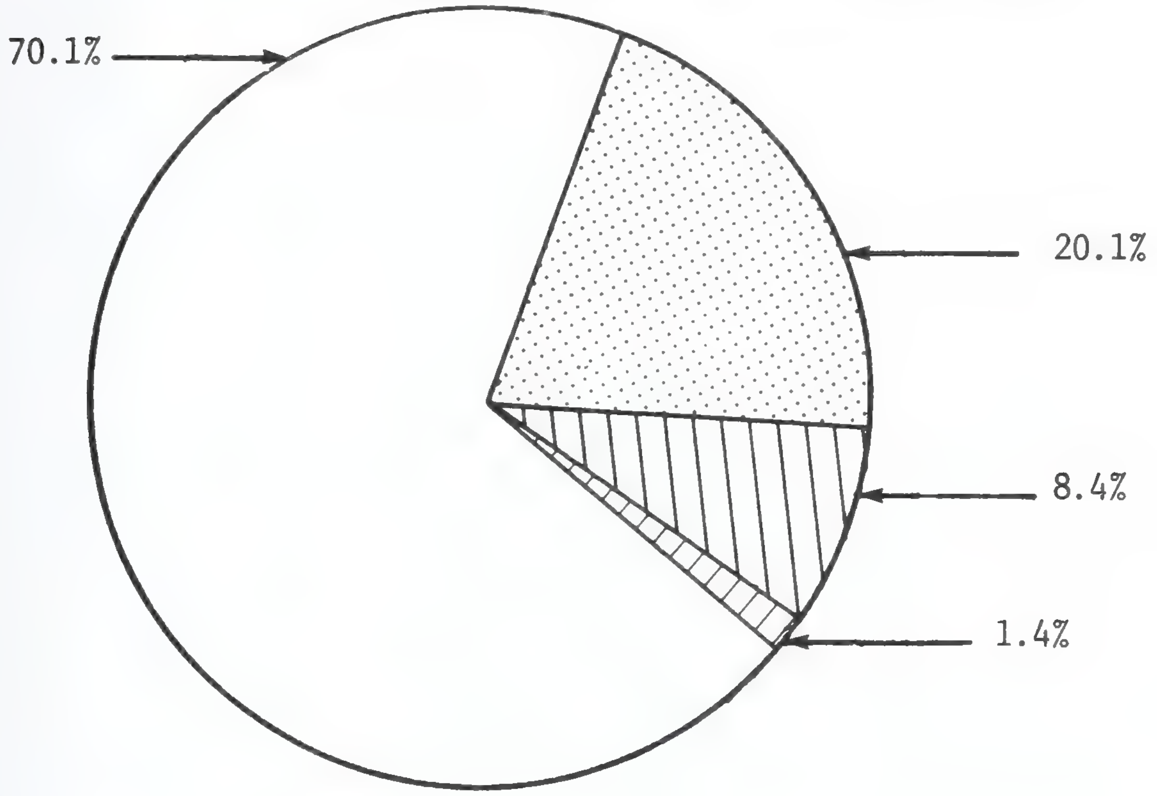
- Annual expenditures for office equipment were $604 million or $134 per employee.

- Annual expenditures for communications equipment and services were almost $1.6 billion or $354 per employee.

EXHIBIT V-222

STRUCTURE OF "LOCAL GOVERNMENTS" SECTOR INCLUDING SCHOOL DISTRICTS (BY SIZE OF ESTABLISHMENT, 1975)

LOCAL GOVERNMENTS
(PARTS OF SIC 91, 92, 93, 94, 95, 96)



159,040 Establishments

LOCAL GOVERNMENTS OTHER THAN SCHOOL DISTRICTS

62,437 Establishments

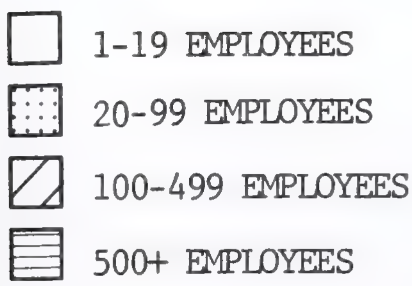


EXHIBIT V-223

DISTRIBUTION OF LOCAL GOVERNMENT OTHER THAN SCHOOL DISTRICT ESTABLISHMENTS (BY STATE)

STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTABLISHMENTS	% OF U.S. TOTAL
AL	749	1.2 %	MT	440	0.7 %
AK	120	0.2	NE	2187	3.5
AZ	169	0.3	NV	167	0.3
AR	895	1.4	NH	341	0.5
CA	2687	4.3	NJ	929	1.5
CO	1132	1.8	NM	220	0.4
CT	414	0.7	NY	2560	4.1
DE	133	0.2	NC	802	1.3
DC	3	0.0	ND	2340	3.7
FL	771	1.2	OH	2619	4.2
GA	1054	1.7	OK	1026	1.6
HI	19	0.0	OR	1093	1.8
ID	784	1.3	PA	4407	7.1
IL	5208	8.3	RI	112	0.2
IN	2477	4.0	SC	490	0.8
IA	1355	2.2	SD	1542	2.5
KS	3384	5.4	TN	867	1.4
KY	944	1.5	TX	2450	3.9
LA	768	1.2	UT	419	0.7
ME	636	1.0	VT	386	0.6
MD	403	0.6	VA	385	0.6
MA	631	1.0	WA	1375	2.2
MI	2002	3.2	WV	453	0.7
MN	2950	4.7	WI	2031	3.3
MS	634	1.0	WY	313	0.5
MO	2171	3.5			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				62,437	100.0 %

EXHIBIT V-224

STATE AND LOCAL GOVERNMENTS:
EDP EQUIPMENT INSTALLED
(BY TYPE AND SIZE OF ESTABLISHMENT)

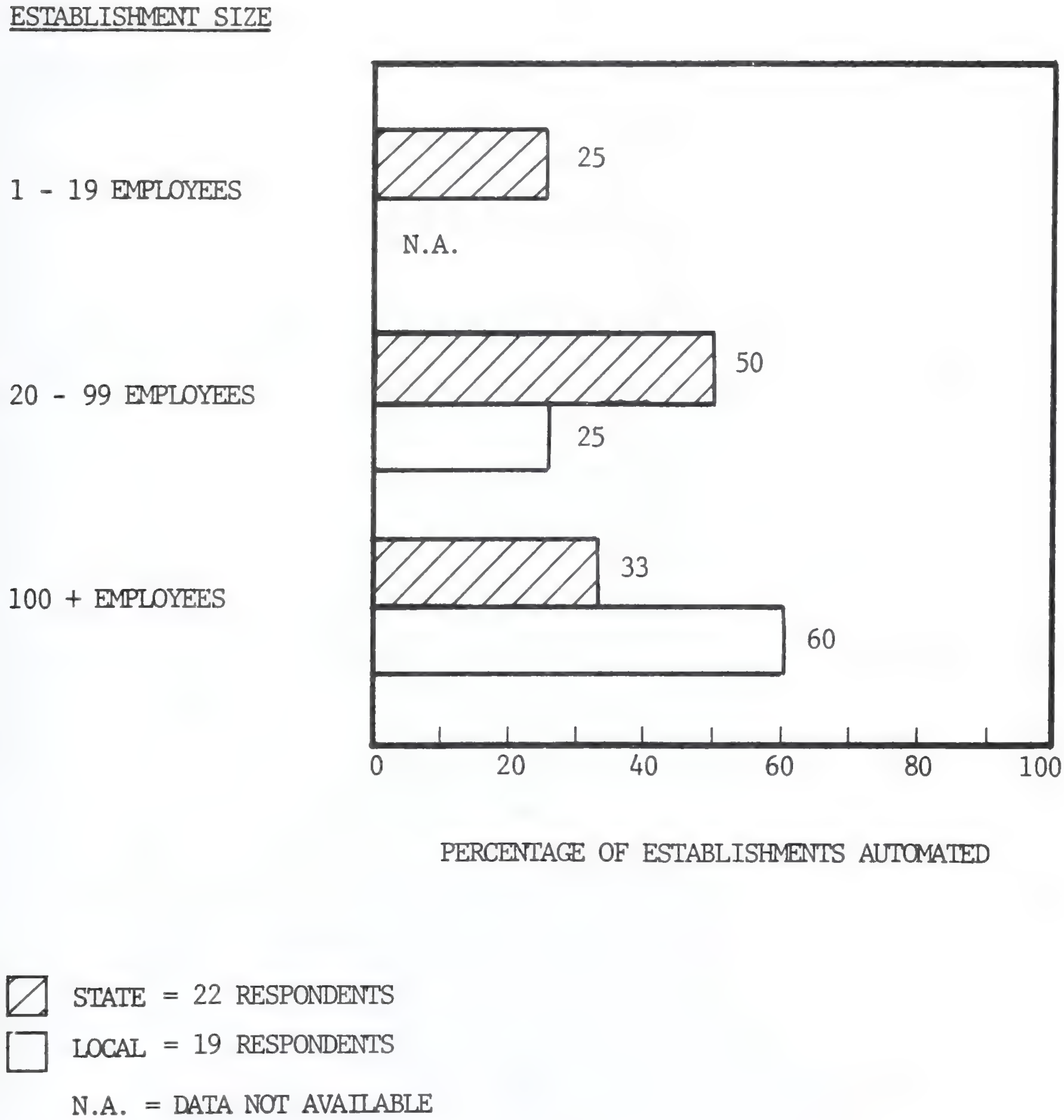


EXHIBIT V-225

STATE GOVERNMENTS:
USE OF COMPUTER SERVICES

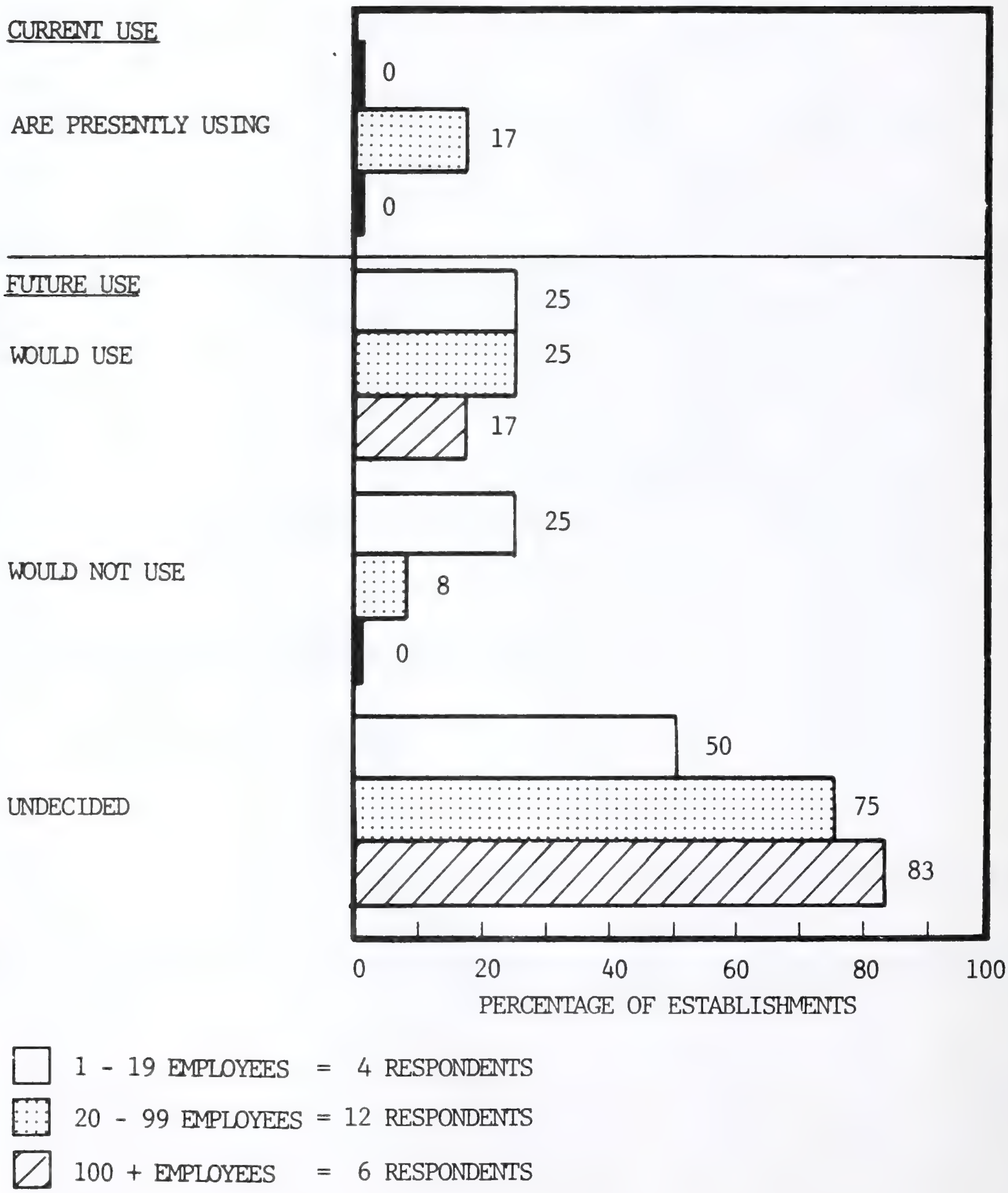


EXHIBIT V-226

LOCAL GOVERNMENTS:
USE OF COMPUTER SERVICES

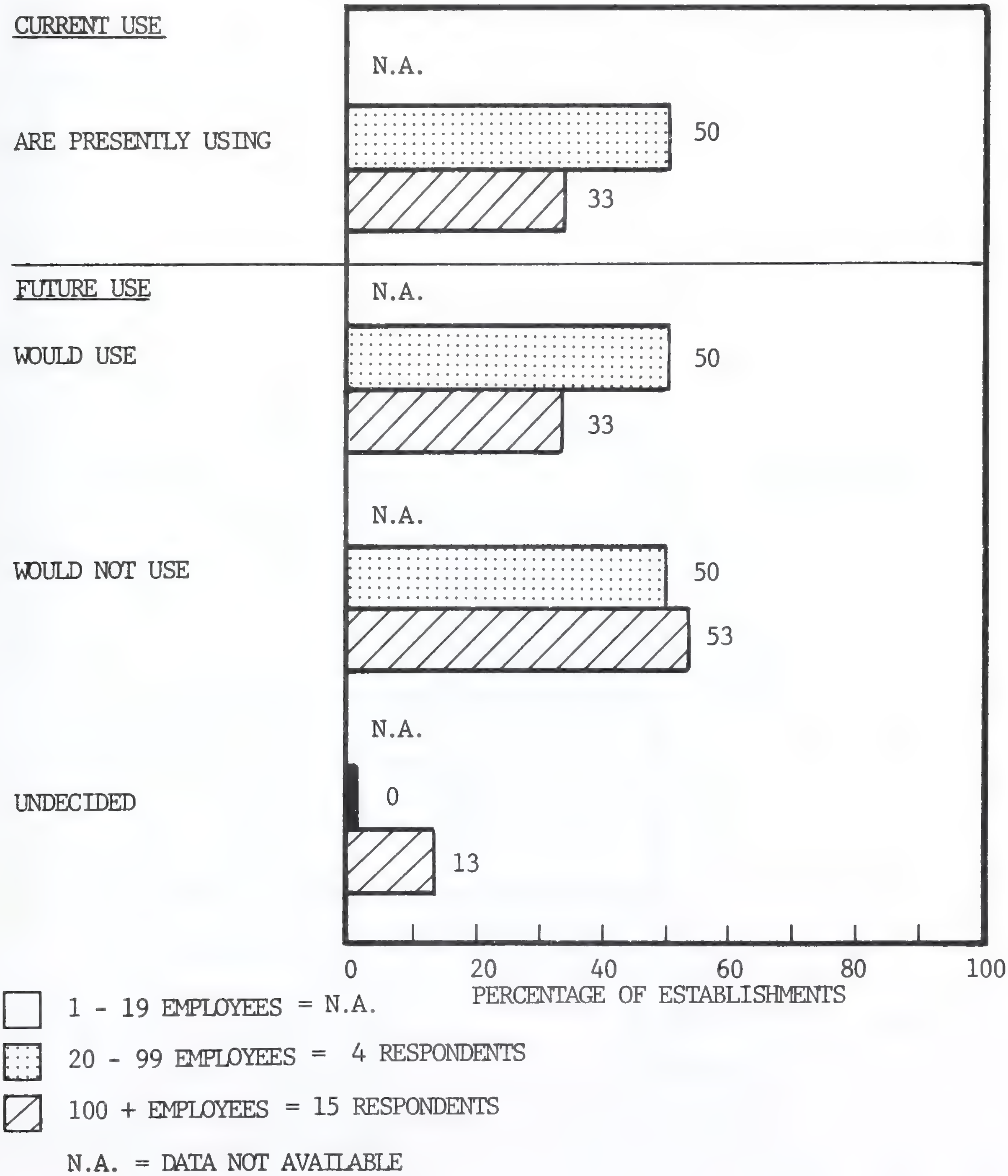


EXHIBIT V-227

STATE AND LOCAL GOVERNMENTS:
PERCENTAGE OF USERS OF COMPUTER EQUIPMENT OR SERVICES OR BOTH
(BY SIZE OF ESTABLISHMENT)

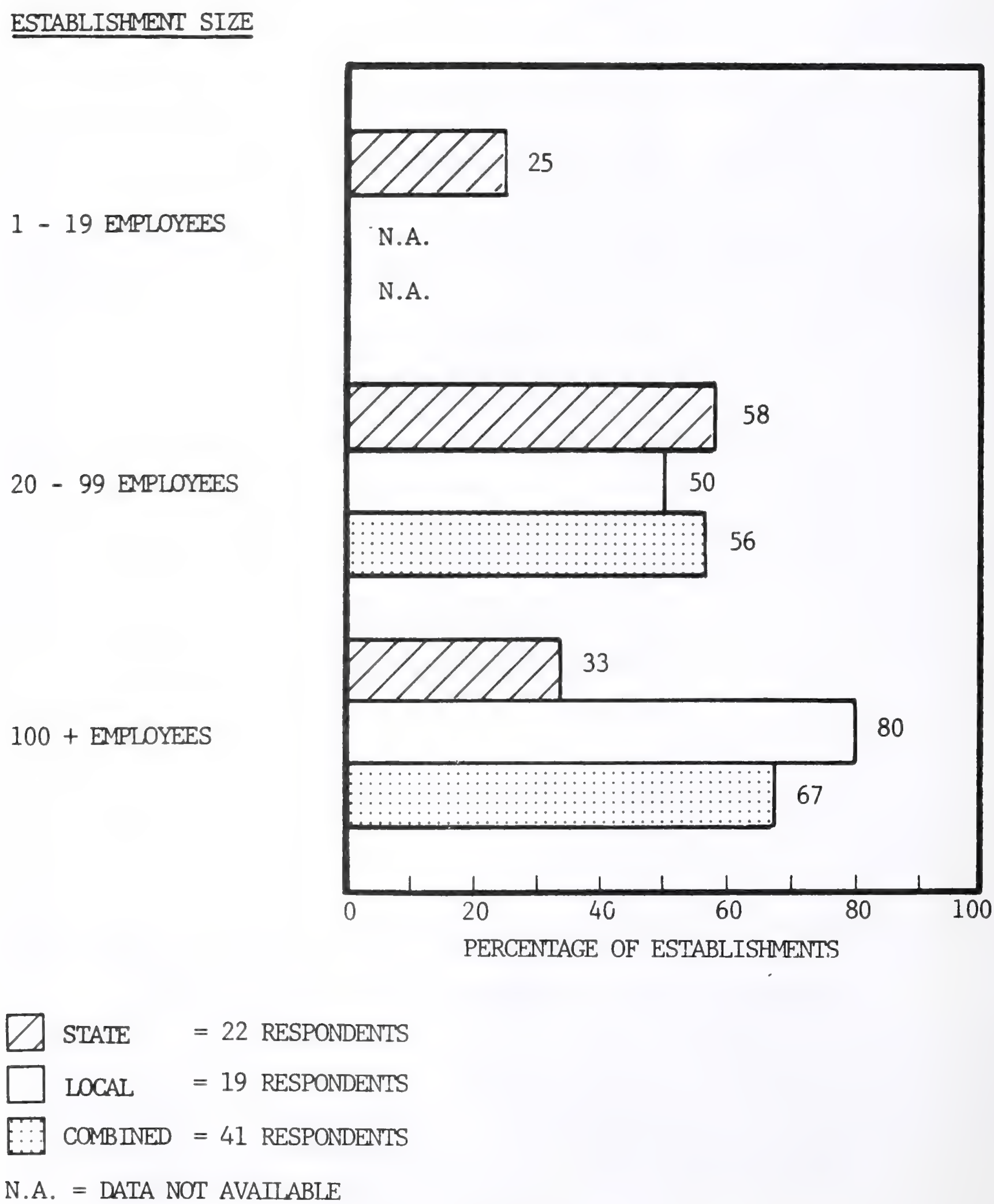


EXHIBIT V-228

STATE AND LOCAL GOVERNMENTS:
USERS OF OFFICE AUTOMATION (BY SIZE OF ESTABLISHMENT)

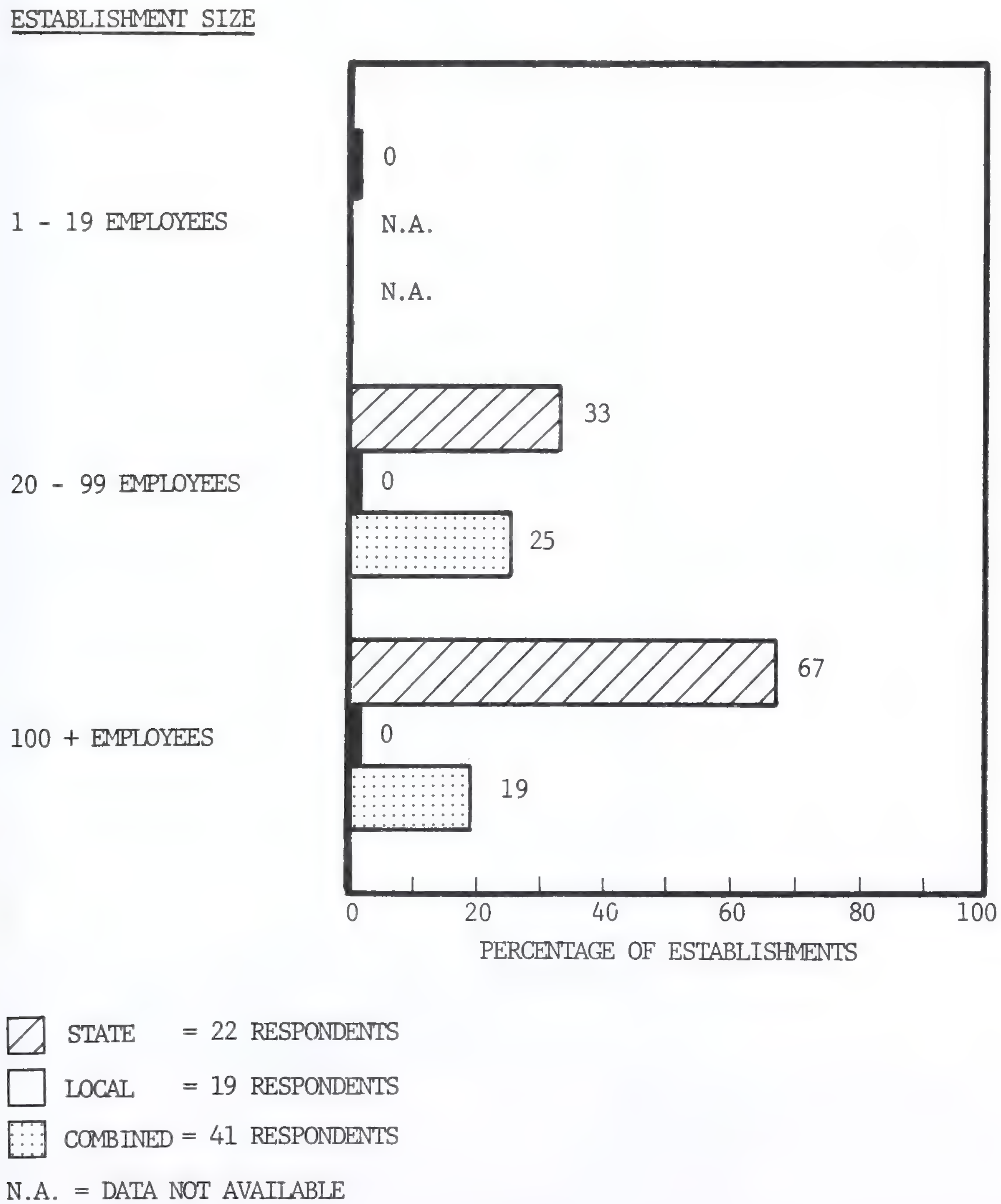


EXHIBIT V-229

STATE AND LOCAL GOVERNMENTS:
COMMUNICATIONS EQUIPMENT INSTALLED

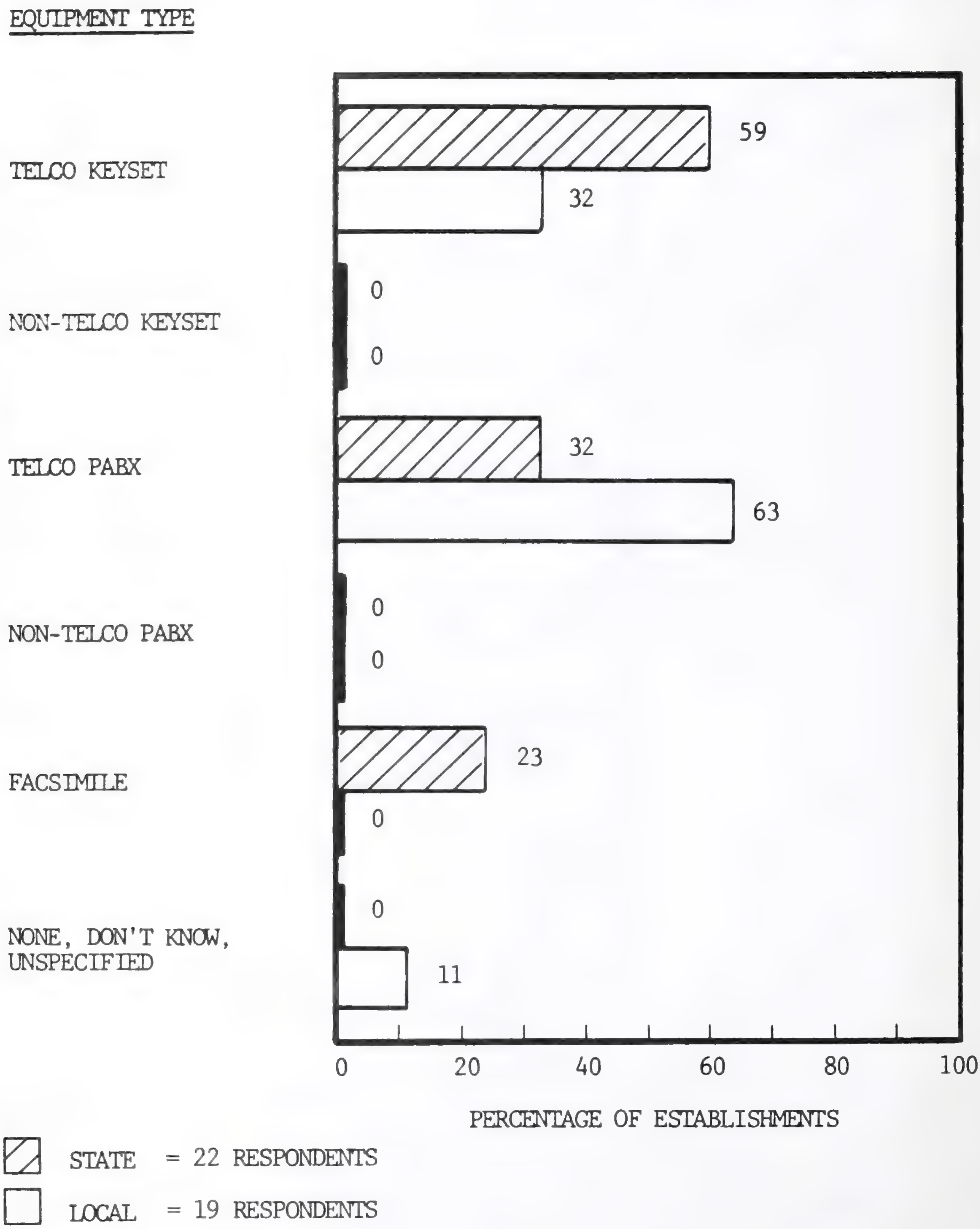


EXHIBIT V-230

STATE AND LOCAL GOVERNMENTS:
COMMUNICATIONS SERVICES INSTALLED

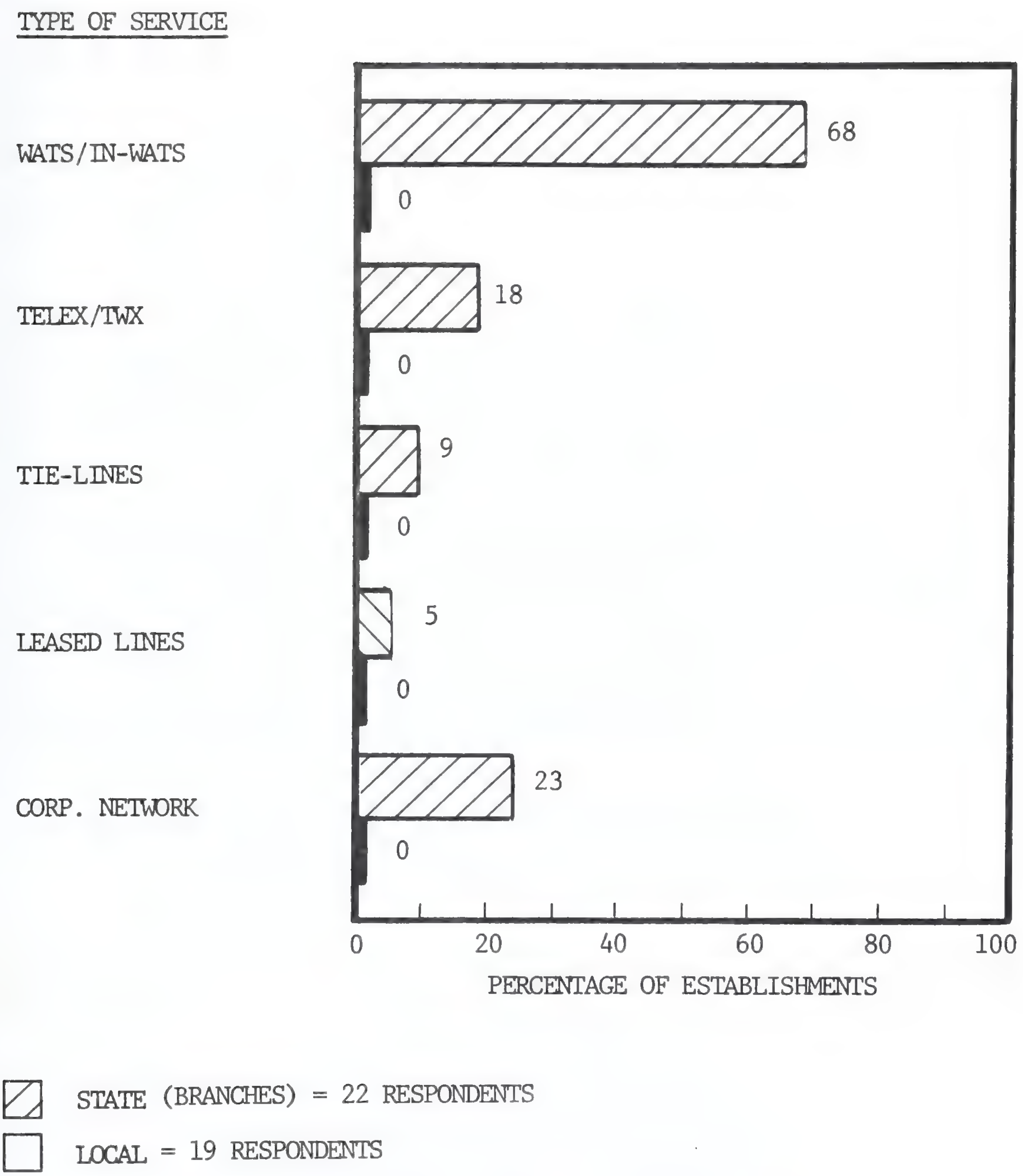


EXHIBIT V-231

STATE AND LOCAL GOVERNMENTS:
USE OF EDP FOR FINANCIAL/ADMINISTRATIVE FUNCTIONS 1978/1983
(BY SIZE OF ESTABLISHMENT)

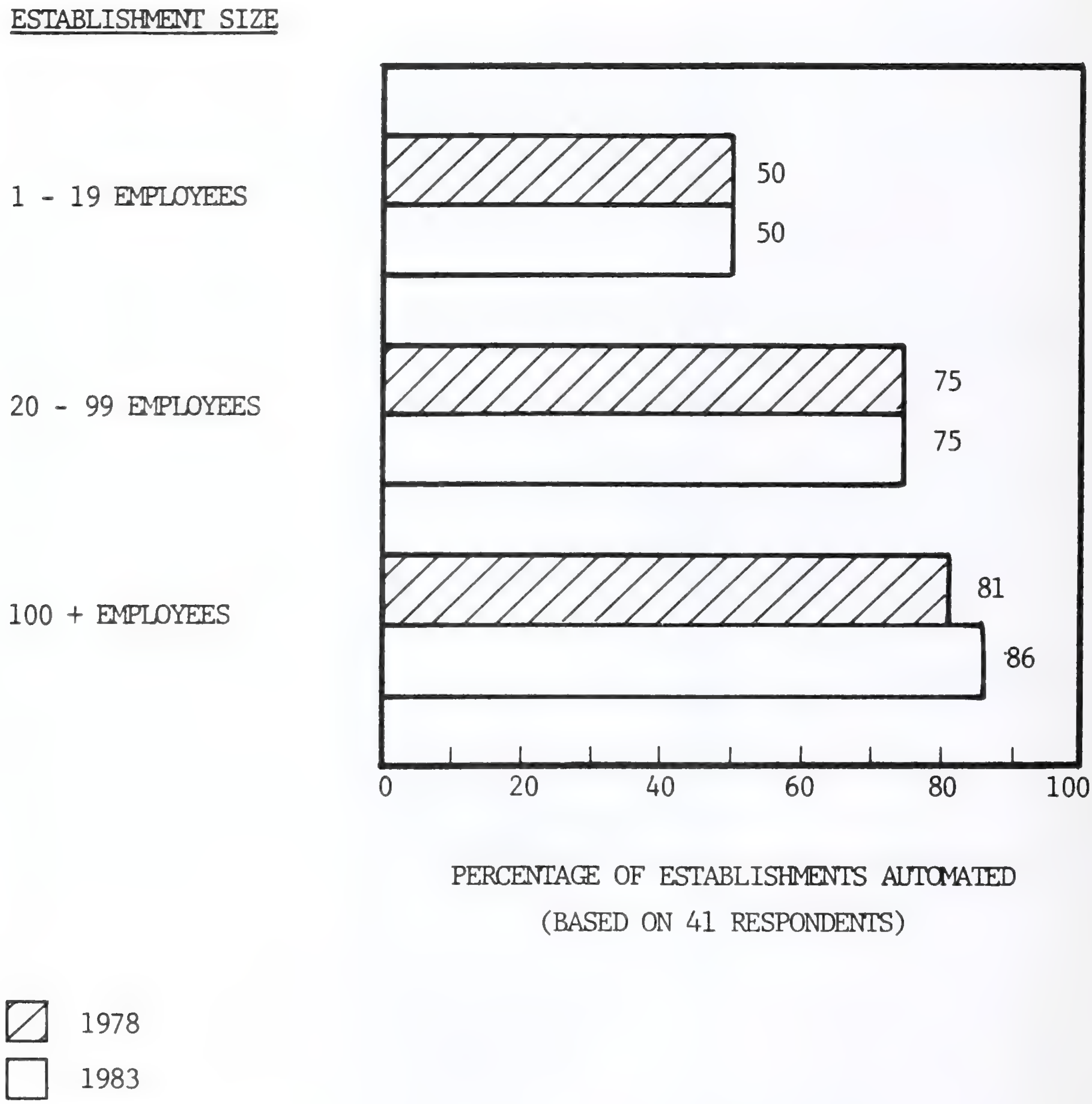


EXHIBIT V-232

STATE AND LOCAL GOVERNMENTS:
USE OF EDP FOR INDUSTRY SPECIFIC FUNCTIONS 1978/1983
(BY SIZE OF ESTABLISHMENT)

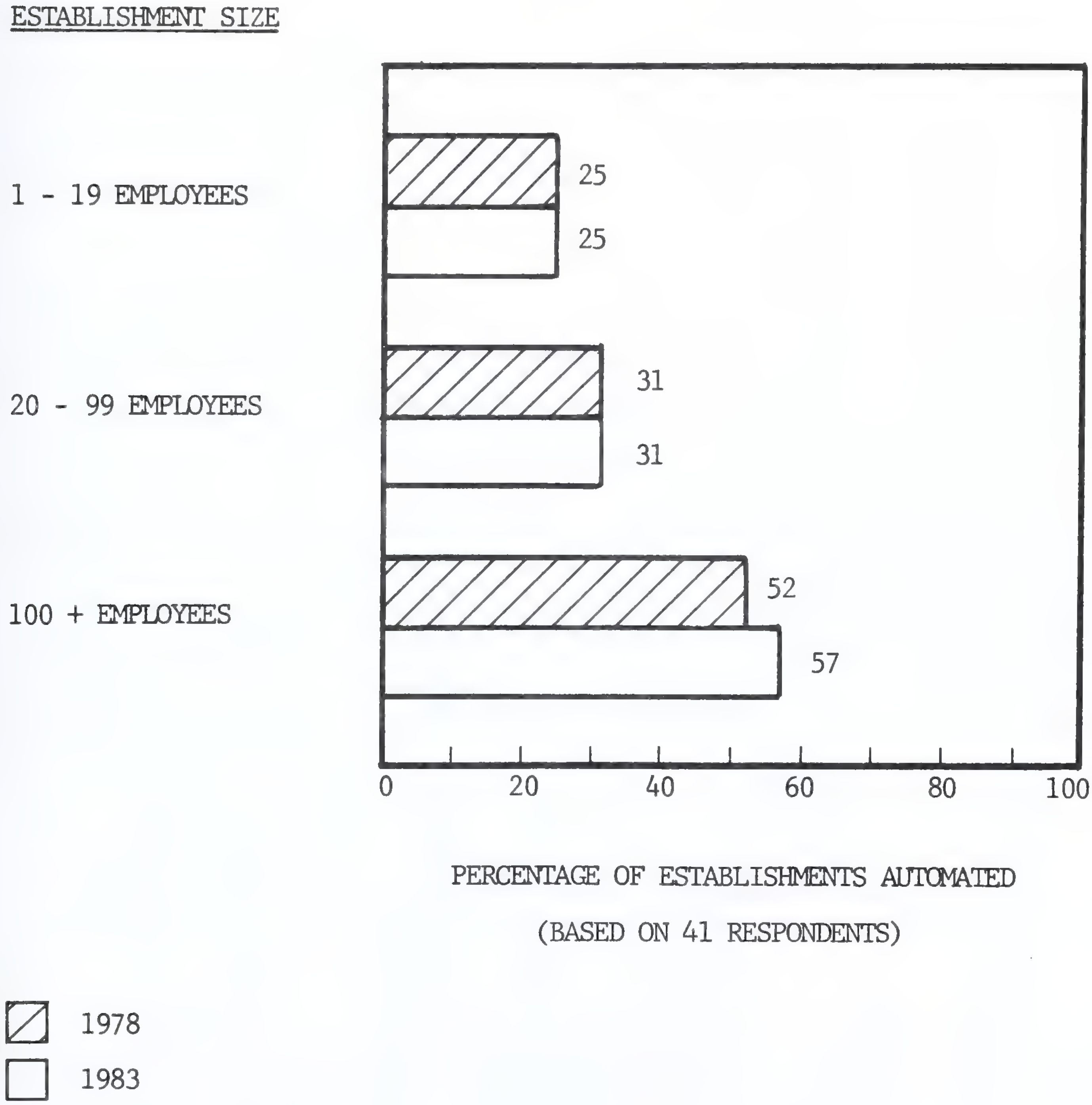


EXHIBIT V-233

STATE AND LOCAL GOVERNMENTS:
ADMINISTRATIVE/SALES APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	LOCAL (N = 19)			STATE (N = 22)		
	Manual Now	Automated Now	Automated In 5 Years (Additional)	Manual Now	Automated Now	Automated In 5 Years (Additional)
MARKETING & SALES						
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-
FINANCE & ACCOUNTING						
Payroll	11%	79%	5 %	18%	59%	-
Billing	5	89	5	27	32	-
Accounts Receivable	21	68	5	27	36	-
Accounts Payable	16	74	5	27	32	-
General Ledger	32	63	5	32	18	-
Other Finance	-	-	-	5	5	-

*On each question there was a varying percentage of "No Responses."
Therefore the sum of manual plus automated now may not equal 100%.
N/A Not Applicable

EXHIBIT V-234

STATE GOVERNMENTS: ADMINISTRATIVE/SALES APPLICATION ANALYSIS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 4)			20 - 99 EMPLOYEES (N = 12)			100 + EMPLOYEES (N = 6)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	50 %	50 %	-	8 %	58 %	-	17 %	67 %	-
Billing	50	50	-	25	50	-	17	17	-
Accounts Receivable	50	50	-	25	42	-	17	17	-
Accounts Payable	50	50	-	25	25	-	17	33	-
General Ledger	50	25	-	33	17	-	17	17	-
Other Finance	-	-	-	-	-	-	17	17	-

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.
N/A = Not Applicable

EXHIBIT V-235

LOCAL GOVERNMENTS: ADMINISTRATIVE/SALES APPLICATION ANALYSIS

APPLICATIONS	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES			20 - 99 EMPLOYEES (N = 4)			100 + EMPLOYEES (N = 15)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
MARKETING AND SALES									
Order Entry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sales Analysis	-	-	-	-	-	-	-	-	-
Credit Authorization	-	-	-	-	-	-	-	-	-
Other Marketing	-	-	-	-	-	-	-	-	-
FINANCE AND ACCOUNTING									
Payroll	N.A.	N.A.	N.A.	25 %	75%	-	7 %	80 %	7%
Billing	-	-	-	-	100	-	7	87	7
Accounts Receivable	-	-	-	50	50	-	13	73	7
Accounts Payable	-	-	-	25	75	-	13	73	7
General Ledger	-	-	-	-	100	-	40	53	7
Other Finance	-	-	-	-	-	-	-	-	-

*On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

N/A = Not Applicable
N.A. = Data Not Available

EXHIBIT V-236

STATE AND LOCAL GOVERNMENTS:

INDUSTRY SPECIFIC APPLICATION ANALYSIS (BY TYPE OF ESTABLISHMENT)

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*					
	LOCAL (N = 19)			STATE (N = 22)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Appropriation Acctg.	11%	58%	5%	-	-	-
Tax Billing/Acctg.	5	74	5	-	-	-
Traffic Citations	5	32	-	-	-	-
Licensing	11	26	-	5	5	-
Other Revenue Acctg.	11	47	5	-	-	-
Budgeting	16	26	5	5	-	-
Welfare/Social Svcs.	-	5	-	5	-	-
Vehicle Registration	5	26	-	-	-	-
Police/Criminal Justice	-	37	5	5	-	-
Environmental Systems	-	11	-	-	-	-
Labor/Employment	5	21	-	9	9	-
Other	-	16	-	32	14	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-237

STATE GOVERNMENTS: INDUSTRY SPECIFIC APPLICATION ANALYSIS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES (N = 4)			20 - 99 EMPLOYEES (N = 12)			100 + EMPLOYEES (N = 6)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Appropriation Accounting	-	-	-	-	-	-	-	-	-
Tax Billing/ Accounting	-	-	-	-	-	-	-	-	-
Traffic Citations	-	-	-	-	-	-	-	-	-
Licensing	25	-	-	-	8	-	-	-	-
Other Revenue Accounting	-	-	-	-	-	-	-	-	-
Budgeting	-	-	-	8	-	-	-	-	-
Welfare/Social Services	-	-	-	-	-	-	17	-	-
Vehicle Registration	-	-	-	-	-	-	-	-	-
Police/Criminal Justice	-	-	-	8	-	-	-	-	-
Environmental Systems	-	-	-	-	-	-	-	-	-
Labor/ Employment	-	25	-	8	8	-	17	-	-
Other	25	-	-	42	17	-	17	17	-

* On each question there was a varying percentage of 'No Responses."
Therefore the sum of manual plus automated now may not equal 100%.

EXHIBIT V-238

LOCAL GOVERNMENTS: INDUSTRY SPECIFIC APPLICATION ANALYSIS

APPLICATION	PERCENTAGE OF RESPONDENTS REPLYING AFFIRMATIVELY*								
	1 - 19 EMPLOYEES			20 - 99 EMPLOYEES (N = 4)			100 + EMPLOYEES (N = 15)		
	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)	Manual	Automated Now	Automated In 5 Yrs. (Addl.)
Appropriation Accounting	N.A.	N.A.	N.A.	-	75%	-	13%	53%	7%
Tax Billing/ Accounting	-	-	-	-	75	-	7	73	7
Traffic Citations	-	-	-	-	-	-	7	40	-
Licensing	-	-	-	-	-	-	13	33	-
Other Revenue Accounting	-	-	-	-	50	-	13	47	7
Budgeting	-	-	-	-	-	-	20	33	7
Welfare/Social Services	-	-	-	-	-	-	-	7	-
Vehicle Registration	-	-	-	-	-	-	7	33	-
Police/Criminal Justice	-	-	-	-	-	-	-	47	7
Environmental Systems	-	-	-	-	-	-	-	13	-
Labor/ Employment	-	-	-	-	-	-	7	27	-
Other	-	-	-	-	-	-	-	20	-

*On each question there was a varying percentage of "No Responses." Therefore the sum of manual plus automated now may not equal 100%.

N.A. = DATA NOT AVAILABLE

EXHIBIT V-239

STATE AND LOCAL GOVERNMENTS:

EDP, OFFICE, AND COMMUNICATION NEEDS (BY SIZE OF ESTABLISHMENT)

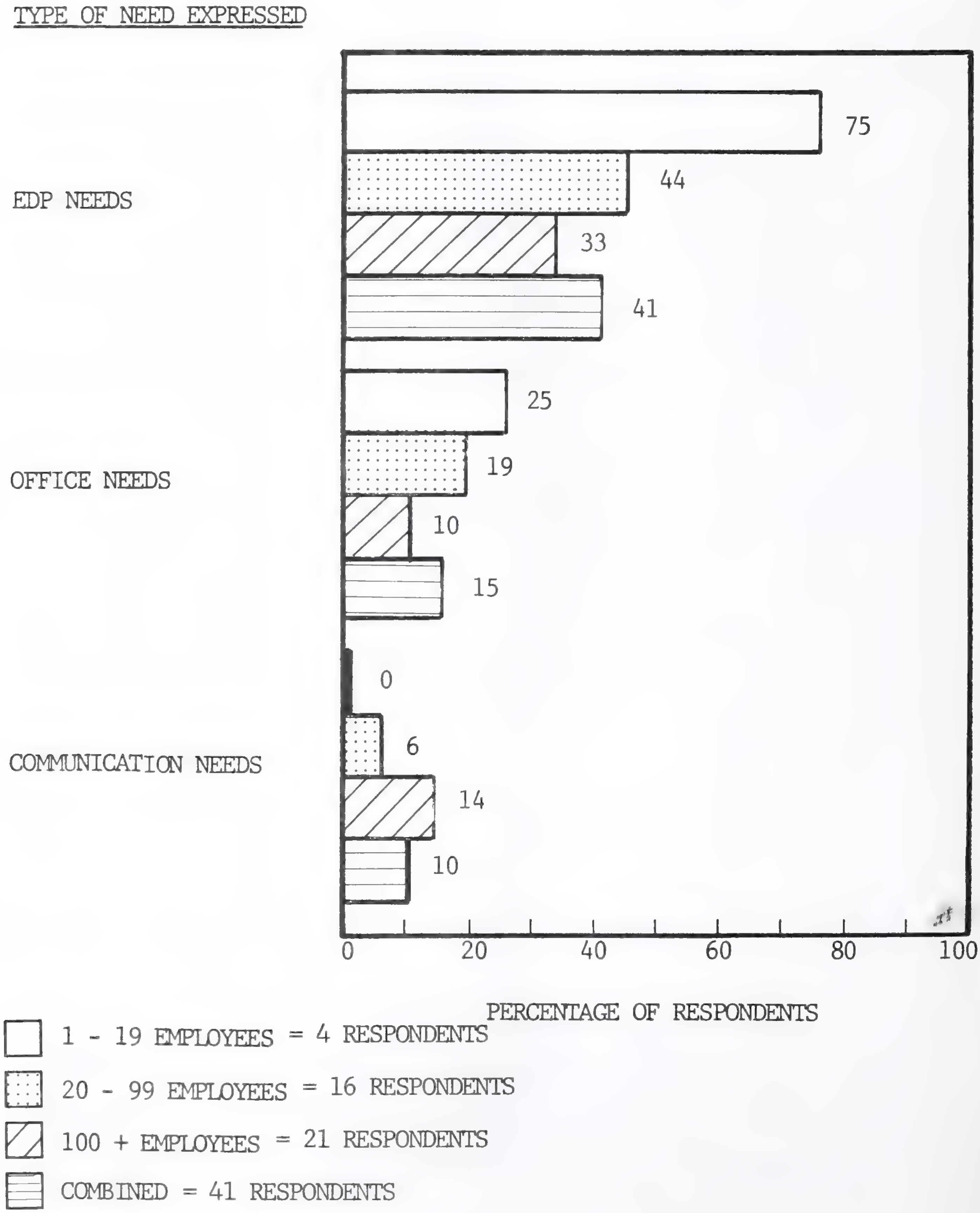


EXHIBIT V-240

TOTAL CURRENT EXPENDITURES
OF THE LOCAL GOVERNMENT SECTOR

EXPENDITURE CLASSIFICATION	1 - 19 EMPLOYEES	20 - 99 EMPLOYEES	100 - 499 EMPLOYEES	TOTAL
EDP EQUIPMENT SERVICES, AND SUPPLIES	$33.1M	$190.9M	$465.0M	$689M
OFFICE EQUIPMENT	$67.6M	$177.0M	$359.4M	$604M
COMMUNICATIONS EQUIPMENT AND SERVICES	$178.2M	$466.2M	$946.6M	$1,591M
TOTAL	$278.9M	$834.1M	$1,771.0M	$2,884M

EXHIBIT V-241

AVERAGE CURRENT EXPENDITURES
OF THE LOCAL GOVERNMENT SECTOR

EXPENDITURE CLASS	$/EMPLOYEE	% GROSS SALES
EDP EQUIPMENT, SERVICES & SUPPLIES	$ 153	N/A
OFFICE EQUIPMENT	134	N/A
COMMUNICATIONS EQUIPMENT & SERVICES	354	N/A

N/A = NOT APPLICABLE

APPENDIX A: SOURCES USED

APPENDIX A: SOURCES USED

I. FEDERAL SOURCES

County Business Patterns - U.S. Summary - U.S. Department of the Census - 1975, Exhibits 1B, 2B

County Business Patterns - U.S. Summary - U.S Department of the Census -- 1972, Exhibits 1B, 2B

1972 Census of Manufacturers - Volume I, Subject and Summary Statistics - U.S. Department of Commerce -- published in 1975

1972 Census of Manufacturing and Mineral Industries -- published in 1975

1972 Census of Transportation - U.S. Department of Commerce -- published in 1975

1972 Compendium of Governments - U.S. Department of Commerce -- published in 1976

1972 Census of Construction Industries - U.S. Department of Commerce -- published in 1975

1972 Census of Retail Trade - Volume I, Subject and Summary Statistics - U.S. Department of Commerce -- published in 1975

1972 Census of Wholesale Trade - Volume I, Subject and Summary Statistics - U.S. Department of Commerce -- published in 1975

1972 Census of Wholesale Trade - Commodity Line Sales - U.S. Department of Commerce -- published in 1975

1972 Enterprise Statistics - Part I, General Report on Industrial Organization -U.S. Department of Commerce -- published in 1974

1976 Annual Survey of Manufacturing - U.S. Department of Commerce

1977 Statistical Abstract of the United States

1977 Statistics for States and Metropolitan Areas - U.S. Department of Commerce

1976 Statistics of Communications Common Carriers - Federal Communications Commission -- published in 1977

"The Accounting Establishment - A Staff Study" - Sub-Committee on Reports, Accounting, and Management - U.S. Senate Government Operations Committee -- 1976

Historical Statistics - Colonial Times to 1970 - U.S. Department of Census -- published in 1972

1972 Standard Industrial Code Manual

2. PRIVATE SOURCES

1977 Committee Handbook - American Institute of Certified Public Accountants

1978 Polk's World Bank Directory - R. L. Polk and Company

1978 Electronic Market Data Book - Electronic Industries Association

Fortune Magazine -- May 8, 1978

Fortune Magazine -- July 17, 1978

1977 Computer Services Industry - Market Analysis Subscription Program - INPUT

Financial Statements of Various Automated Equipment Manufacturers

APPENDIX B: INTERVIEW PROGRAM

APPENDIX B: INTERVIEW PROGRAM FOR THE SMALL ESTABLISHMENT SERVICE ANNUAL REPORT

INDUSTRY SECTOR		ESTABLISHMENT SIZE									TOTAL			
		1 TO 19 EMPLOYEES			20 TO 40 EMPLOYEES			100 + EMPLOYEES						
		ON-SITE	PHONE	HY-BRID	ON-SITE	PHONE	HY-BRID	ON-SITE	PHONE	HY-BRID	ON-SITF	PHONE	HY-BRID	ROW TOTAL
DISCRETE MANUFACTUR-ING	INDEPENDENT FIRMS	0	2	7	4	7	6	7	9	26	11	18	39	68
	"FORTUNE 500" BRANCHES	0	3	5	0	5	3	7	7	12	7	15	20	42
PROCESS MANUFACTUR-ING	INDEPENDENT FIRMS	0	1	9	0	3	6	1	3	8	1	7	23	31
	"FORTUNE 500" BRANCHES	0	8	2	0	5	1	0	10	8	0	23	11	34
TRANSPOR-TATION	INDEPENDENT FIRMS	0	2	0	0	11	0	0	10	1	0	23	1	24
	"FORTUNE 50" BRANCHES	0	0	0	0	5	2	2	13	0	2	18	2	22
UTILITIES	INDEPENDENT FIRMS	0	5	0	0	8	0	0	7	0	0	20	0	20
		NOT APPLICABLE												
WHOLESALE	INDEPENDENT FIRMS	0	0	0	0	25	0	0	4	0	0	29	0	29
	"FORTUNE 500 /50" BRANCHES	0	4	0	0	9	0	0	6	0	0	19	0	19
RETAIL	INDEPENDENT FIRMS	0	10	0	0	13	0	0	7	0	0	30	0	30
	"FORTUNE 50" BRANCHES	0	2	0	0	16	0	0	17	0	0	35	0	35
BANKING	INDEPENDENT FIRMS	0	8	0	1	6	1	0	10	1	1	24	2	27
	"FORTUNE 50" BRANCHES	0	16	1	0	7	0	0	1	2	0	24	3	27
INSURANCE	INDEPENDENT FIRMS	0	12	0	0	7	0	0	3	0	0	22	0	22
	"FORTUNE 50" BRANCHES	0	7	0	0	6	0	0	6	0	0	19	0	19
HEALTH SERVICES	INDEPENDENT FIRMS	0	1	0	0	3	0	0	13	0	0	17	0	17
		NOT APPLICABLE												
EDUCATIONAL SERVICES	INDEPENDENT FIRMS	0	0	0	0	11	0	0	13	0	0	24	0	24
		NOT APPLICABLE												
OTHER SERVICES	INDEPENDENT FIRMS	0	10	0	0	18	0	0	3	0	0	31	0	31
	"BIG 8" BRANCHES	0	3	0	0	14	0	0	6	0	0	23	0	23
GOVERNMENT	MUNICIPAL GOVERNMENT	0	0	0	0	4	0	0	15	0	0	19	0	19
	STATE GOV'T BRANCHES	0	4	0	0	12	0	0	6	0	0	22	0	22
SUB-TOTAL	INDEPENDENT ESTABLISHMENT	07			134			141			342			
	BRANCH LOCATIONS	55			85			103			243			
GRAND TOTALS		122			219			244			585			

APPENDIX C: DEFINITIONS

APPENDIX C: DEFINITIONS

- An enterprise is a business organization.

- An establishment is a physical location or a street address and can be:

  - An independent enterprise.

  - A branch of a major enterprise.

- An establishment can be a single-unit enterprise (SUE) or part of a multi-unit enterprise (MUE):

  - A single unit enterprise is an establishment having all operations consisting of activities not distinctly separable.

  - A multi-unit enterprise is a business organization consisting of more than one establishment or an establishment having distinctly separable activities.

- A branch is a physical location or street address and part of:

  - A Fortune 500 corporation.

  - A Fortune 50 corporation.

- A "Big Eight" accounting firm.

- A state government.

- An independent establishment is a SUE or MUE whose employment is 500 employees or less, and which is not a branch as defined above.

- Computer services are provided by vendors which perform data processing functions using vendor computers, or who assist users to perform such functions on their own computers; included are remote computing services (RCS), batch services, facilities management, professional services, and software products.

- Computer equipment includes any locally installed terminal, minicomputer, or mainframe. For the purpose of forecasting only, the term is defined as locally installed general purpose minicomputer or mainframe; i.e., local processing intelligence -- not including desk top calculators or accounting machines.

- Communications equipment includes keyset or PABX. Communications automation is defined as interconnect, which is the attachment and use of non-telephone company equipment together with telephone company equipment or services.

- Communications services includes direct dial long distance (DDD), WATS, leased lines, tie lines, Telex/TWX, or other regulated transmission of voice or data.

- Office automation is defined as the use of word processing/text editing equipment, either single station or multi-station.

- Office equipment includes word processing, photocopiers, duplication machines and facsimile equipment.

- Industry specific EDP applications are defined as EDP applications which are important automatable functions of an industry or group of industries; e.g., interline payables (transportation) and bill of materials (discrete manufacturing). A comprehensive listing of industry specific applications appears in Appendix E as part of the small establishment questionnaire.

APPENDIX D: EXPENDITURE METHODOLOGY

APPENDIX D: EXPENDITURE METHODOLOGY

- The total expenditures of all small establishments on information processing and communications equipment and services were obtained by:

  - Determining the 1977 United States sales of this equipment and these services from vendor annual reports, 10K statements, and other similar information sources.

  - Apportioning these sales among the various industry sectors.

  - Checking the analysis with the expenditures reported by small establishments during interviews.

- The determination of the total 1977 United States sales of information processing equipment and services was made by:

  - Listing the reported sales of the major vendors of computer equipment, computer services, office equipment, and communications equipment and services.

  - Determining from annual reports, 10K statements, and vendor interviewing what percentage of these sales were domestic. (Note that AT&T and GTE communications services were apportioned as 50 percent residential and 50 percent business, based upon interviews held with AT&T and other carriers.)

- Estimating the total of sales for additional small United States vendors which were not analyzed, and for foreign vendors selling into the United States market.

- Apportioning the total sales of the vendor community into small establishments in the 12 industry sectors of this report was accomplished by:

  - Taking the total number of employees in the United States in each category of firm sizes and dividing this total by the number of firms in that category size, resulting in the average number of employees for each category of firm size. For example, the 16,395,000 employees and the 3,613,000 firms in the 1-19 category size resulted in the average of 4.5 employees for each of these firms; 41.1 employees on average for firms 20-99 in size; and an average of 201 employees for firms 100 - 499 employees in size.

  - The number of firms by employee size in each sector multiplied by the average number of employees in each size resulted in the number of employees in each category size of each sector.

  - The degree of penetration (use) of EDP equipment, computed separately for each size category in each sector (1-19 employees, 20-99 employees, and 100-499 employees), was multiplied by the number of employees in that category to determine the number of employees using EDP.

  - The banking and finance sector was adjusted upward slightly to compensate for the high value of EDP equipment already installed in that sector based on other studies performed by INPUT, and the "other services" sector was adjusted downward slightly to take into account the unpenetrated components of that sector.

  - All of these categories were then added as appropriate to determine that:

    . Forty-nine million employees work in establishments of less than 500 employees in the United States. This is 70 percent of the total of 70 million employees in the United States.

    . A total of 31 million employees work in small establishments in the United States which use EDP equipment or services. This is 44 percent of the 70 million employees in the United States.

- These percentages can be restated as:

    . Forty-four percent of EDP equipment, services, and supplies are sold to small establishments.

    . Seventy percent of all office and communications equipment (of all kinds) and 70 percent of all communications service expenditures are sold to small establishments.

- As a result of the above, it was determined that expenditures of small establishments in the United States are:

    . For EDP equipment, services, and supplies, \$8.010 billion.

    . For communications equipment, and services, \$18.500 billion.

    . For office equipment, \$7.028 billion.

- To apportion these small establishment sales among the various business sectors, the number of employees using EDP in the individual sectors was divided by the total number of employees using EDP in all the small establishment sectors. The resulting ratios are:

    - Discrete manufacturing 13.1%

    - Process manufacturing 10.3%

-	Transportation	2.6%
-	Utilities	3.2%
-	Banking	8.1%
-	Insurance	2.7%
-	Health services	4.5%
-	Educational services	1.1%
-	Retail	15.1%
-	Wholesale	6.4%
-	Other services	17.8%
-	State & local government	8.6%
-	Sectors not analyzed in detail	6.5%

- Office equipment expenditures and communications equipment and services expenditures were apportioned among sectors by the same ratio as EDP equipment because:

  - The more automated firms will tend to use more of all types of automation.

  - This technique showed the best correlation with the user interviews.

- Within each sector, expenditures were than apportioned to size classes (1-19, 20-99, 100-499) by the ratios of total employees in the size class for office and communications equipment and services. For computer equipment and serv-

ices, the ratio used was total employees times the percentage of penetration for computer equipment and services in that sector, compared to the total number of employees. This was done because office and communications equipment and communications services are used by each firm, but computer equipment and services are not.

- In order to determine what percentage of EDP expenditures is spent for outside computer services, and what percentage is spent for computer equipment, the following techniques were used:

  - Independents only were analyzed, assuming that branches will be similar and that the omission of branches will not distort the data (because there are many less branches than independents.)

  - On the basis of respondent data by industry sector and establishment size (1-19, 20-99, and 100-499 employees), the users were separated according to use of equipment only, services only, or both equipment and services.

- For each industry and establishment size category, the component spent on computer services by the users of both equipment and services was estimated using the appropriate industry ratios for computer services in INPUT's report on EDP Plans And Budgets For 1977 (part of the Market Analysis Service).

  - This component was then added to the component spent for outside computer services only for each industry and size of establishment.

- This result was then factored by the number of employees in each establishment size category for each industry sector to obtain the overall percentage and amount spent on computer services for each sector.

- The difference between this amount and the total spent for computer equipment and services combined is the amount attributable to expenditures for computer equipment alone.

APPENDIX E: QUESTIONNAIRE

Catalog No. ______________

CONFIDENTIAL SMALL ESTABLISHMENT SURVEY

We have been retained by a group of clients in the office products, computer, and communications industries to determine how they can better serve the needs of small and medium sized locations in your line of business. We are especially interested in the factors that influence how you obtain goods and services. All information will be kept strictly confidential and used for statistical purposes only.

SECTION I - GENERAL INFORMATION ABOUT YOUR COMPANY

1a. Is this location: headquarters of an independent enterprise ( )
part of a larger company ( )

1b. How many other locations are there? ______

2. What is the PRIMARY line of business at this location?

<u>Description of Product or Service</u> <u>Regional or National</u>

3. What is the SECONDARY line of business at this location (if any)?

<u>Description of Product of Service</u> <u>Regional or National</u>

4. What functions are performed here? ( )Sales ( )Accounting ( )R & D ( )Warehousing ( )Manufacturing ( )Other________________________

5. What are the annual gross sales at this location (if applicable) $______ per yr.

6. How many employees at this location?
__________ production __________ office __________ management

SECTION II - IMPROVEMENT PLANS

1. What are the most significant administrative or information-related problems in your organization that you would like to see resolved?
____
____

2. Would a piece of office equipment that can accommodate several administrative functions be more attractive to you than single-function equipment? ( )Yes ( )No ( )Depends on application. Which administrative functions would it have to handle?____________________
____

3. What do you consider your primary data processing needs?____________
____

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4. What are the most important improvements that are needed in the telephone/communications area? ______________________________

____

5. What is currently preventing you from automating more of your office operations? ______________________________

____

6. In order of priority, what improvements do you expect to make in any of these areas in the next two years? ______________________________

____

In the next 3-5 years? ______________________________

7. Would you consider (or have you considered) using an outside service for any of these improvements?

( )Yes. Which functions? ______________________________

( )No. Why? ______________________________

8. How can office, communications, data processing equipment manufacturers better meet your needs? ______________________________

____

SECTION III - OFFICE AND COMMUNICATION REQUIREMENTS

1. Please check all of the following that apply to your location.

Office Function	Doing Now	Will Do Within 5 Yrs.
Copying	( )	( )
Duplication/Printing (using ink)	( )	( )
Text/Word Processing (automatic equipment)	( )	( )
Photocomposition	( )	( )
Other ______________	( )	( )

2. If you are doing or planning to do any of the following over phone lines, please check all that apply.

Communication Function	Using Now		Will Be Using In 5 Yrs.	
	Inside Parent Organization	To Other Companies	Inside Parent Organization	To Other Companies
WATS or private lines	( )	( )	( )	( )
Telex/TWX	( )	( )	( )	( )
Sending data by phone to or from computers	( )	( )	( )	( )
Text editing by phone to or from another location	( )	( )	( )	( )
Facsimile transmission	( )	( )	( )	( )
Other ______________	( )	( )	( )	( )

3. What major changes do you foresee for your company in either of these areas? ______________________________

____

____

4. What other problems do you have in these areas that you would like to see resolved? ______________________________

____

SECTION IV - EDP FUNCTIONAL REQUIREMENTS

1. If you are presently performing the following functions by hand at your location, or if you are using a computer, terminal, or outside computer services firm, or if you expect to automate any of these functions within 5 years, please check all that apply. Otherwise, check this box ( ) and skip to the next section.

	DONE BY HAND NOW	AUTOMATED NOW	AUTOMATED WITHIN 5 YEARS
Marketing & Sales			
Order Entry	( )	( )	( )
Sales Analysis	( )	( )	( )
Credit Authorization	( )	( )	( )
Other ______________	( )	( )	( )
Finance-Accounting			
Payroll	( )	( )	( )
Billing	( )	( )	( )
Accts. Receivable	( )	( )	( )
Accts. Payable	( )	( )	( )
General Ledger	( )	( )	( )
Other ______________	( )	( )	( )
Warehousing-Distribution			
Order Allocation	( )	( )	( )
Shipping	( )	( )	( )
Stock Replenishment	( )	( )	( )
Other ______________	( )	( )	( )

	DONE BY HAND NOW	AUTOMATED NOW	AUTOMATED WITHIN 5 YEARS
Purchasing			
Inventory Control	( )	( )	( )
Receiving	( )	( )	( )
Other ____________	( )	( )	( )
Manufacturing			
Bill of Materials	( )	( )	( )
Shop Floor Control	( )	( )	( )
Order Tracking	( )	( )	( )
Material Requirements Planning	( )	( )	( )
Scheduling	( )	( )	( )
Job Costing	( )	( )	( )
Estimating	( )	( )	( )
Numerical Control	( )	( )	( )
Other ____________	( )	( )	( )
R & D			
Analysis/Design	( )	( )	( )
Other ____________	( )	( )	( )

2. What major changes in EDP do you foresee for your company in the next 5 years? ____

3. What other EDP problems do you have that you would like to see resolved?

____

SECTION V - DECISION PROCESS

1. How do you usually go about finding a solution to any of these problems? Please mark 1st, 2nd, and 3rd choice.

	1st	2nd	3rd
Look at trade journals	( )	( )	( )
Look at catalogues	( )	( )	( )
Look in the Yellow Pages	( )	( )	( )
Talk to other companies/divisions	( )	( )	( )
Salesmen call on you	( )	( )	( )
Send for literature	( )	( )	( )
Attend a trade show by your industry	( )	( )	( )
Demonstration or show by their company	( )	( )	( )
Other ______________________	( )	( )	( )

2. Which journals and publications are most useful to you? ____________

____

____

3. Which trade shows are most useful to you? ____________

____

____

4. Who is involved in the decision to obtain equipment or services? (please check all that apply)

	AT THIS LOCATION			AT CORP. HDQTRS.		
	Top Mgmt.	Dept. Head, Line Mgr.	Ofc. Mgr., EDP Mgr.	V-P or above	Purch. Dept.	Tech. Staff
EDP Equipment	( )	( )	( )	( )	( )	( )
EDP Services	( )	( )	( )	( )	( )	( )
Office Equipment	( )	( )	( )	( )	( )	( )
Office Services	( )	( )	( )	( )	( )	( )
Communications Eqpt.	( )	( )	( )	( )	( )	( )
Communications Svcs.	( )	( )	( )	( )	( )	( )
Supplies	( )	( )	( )	( )	( )	( )

5. Does the final decision require:
( ) committee approval
( ) trial installation
( ) financial/payback analysis
( ) special conditions: ____________

IF YOU ARE AN INDEPENDENT ENTERPRISE SKIP TO SECTION VI

6. Describe any significant differences in decision techniques depending on product/services listed in question 4.

7. How does corporate get involved? (Please check all that apply)
( )Initiate ( )Advise ( )Approve ( )Dictate ( ) Set Standards

8. If corporate involvement varies, does it depend upon:
( )$ Amount ( )Type of device/service ( )Application
( ) Other (specify) ____________

SUPPLEMENT—INDUSTRY SPECIALIZED APPLICATIONS

If any of the following application areas pertain to your organization, please complete in the same manner as Section IV. If necessary, use reverse side and check here ( ).

	DONE BY HAND NOW	AUTOMATED NOW	AUTOMATED WITHIN 5 YEARS
Banking/Finance			
Demand Deposit Actg.	( )	( )	( )
Savings Deposit Actg.	( )	( )	( )
Consumer Loans	( )	( )	( )
Commercial Loans	( )	( )	( )
Proof of Deposit	( )	( )	( )
Customer Info. System	( )	( )	( )
Other ________________	( )	( )	( )
Education			
Student Scheduling	( )	( )	( )
Admissions/Registration	( )	( )	( )
Student Records/Grades	( )	( )	( )
Attendance Actg.	( )	( )	( )
Computer Assisted Instruction/Problem Solving	( )	( )	( )
Other ________________	( )	( )	( )
Government			
Appropriation Actg.	( )	( )	( )
Tax Billing/Actg.	( )	( )	( )
Traffic Citations	( )	( )	( )
Licensing	( )	( )	( )
Other Revenue Actg.	( )	( )	( )
Budgeting	( )	( )	( )
Welfare/Social Services	( )	( )	( )
Vehicle Registration	( )	( )	( )
Police/Criminal Justice	( )	( )	( )
Environmental System	( )	( )	( )
Labor/Employment	( )	( )	( )
Other ________________	( )	( )	( )

	DONE BY HAND NOW	AUTOMATED NOW	AUTOMATED WITHIN 5 YEARS
Hospitals/Health Care			
Admissions/Discharge	( )	( )	( )
Third Party Claims	( )	( )	( )
Bed Availability/Census	( )	( )	( )
Medical Record/Statistics	( )	( )	( )
Utilization Review	( )	( )	( )
Cafeteria/Menu	( )	( )	( )
Other ________________	( )	( )	( )
Insurance			
File Maintenance	( )	( )	( )
Policy Accounting	( )	( )	( )
Commission Accounting	( )	( )	( )
Policy Issue/Renewals	( )	( )	( )
Claims Processing	( )	( )	( )
Actuarial/Statistical	( )	( )	( )
Other ________________	( )	( )	( )
Transportation			
Freight Bill Entry	( )	( )	( )
Interline Payables	( )	( )	( )
Shipment Analysis	( )	( )	( )
Rate Analysis	( )	( )	( )
Owner/Operator Actg.	( )	( )	( )
Equipment Inventory	( )	( )	( )
Other ________________	( )	( )	( )
Utilities			
Customer Records	( )	( )	( )
Revenue Accounting	( )	( )	( )
Material Management	( )	( )	( )
Other ________________	( )	( )	( )

SECTION VI - WHAT IS PRESENTLY IN USE AT YOUR LOCATION?

A - Equipment

	Company Make/Model	Number In Use	Approx. Cost
1. Computer Related			
a. Accounting Machine	________	______	__________
b. Desk Top Calculator	________	______	__________
c. Terminal	________	______	__________
d. Small business Computer	________	______	__________

If d, is it connected to headquarters? ( )Yes ( )No

2. Copiers	Company Make/Model	Number In Use	No. Copies/Month
a. Coated Paper Copier	________	______	__________
b. Plain Paper Copier	________	______	__________
c. Duplicator (ink process, uses a master)	________	______	__________

3. Text Editing/Word Processing	Company Make/Model	Number In Use	No. Pages/Month
a. Single station	________	______	__________
b. Multi-station	________	______	__________
c. Other____________	________	______	__________

4. Communications Related	Company Make/Model	Number In Use	No. Trunks
a. Keyset	________	______	__________
b. PABX	________	______	__________
c. Facsimile	________	______	__________
d. Other____________	________	______	__________

B - Outside Services

5. EDP Services	Service Type	% Of Total EDP Function Performed By Services
	__________	______________
	__________	______________

6. Office Services	Service Type	% Of Total Office Function Performed By Services
a. Text Processing	__________	______________
b. Composition	__________	______________

7. Communications Services	Service Type	% To Your Co.	% To Other Companies
a. From phone company	__________	______%	_____%
b. From independent supplier of services not equipment mfg. (ie. Western Union, MCI)	__________	______%	_____%

SECTION VII - SIZE OF STAFF

1. How many full-time equivalent employees do you have at your location in these classifications?

	Now	Changes expected in next 5 years
EDP RELATED		
a. Data Entry (only)	______	______
b. Operators (only)	______	______
c. Programmers	______	______
d. Analysts	______	______
OFFICE RELATED		
e. Secretaries/Typists	______	______
f. Clerks	______	______
g. Other______	______	______
COMMUNICATIONS RELATED		
h. Switchboard Operators	______	______
i. Technicians/Professionals	______	______

2. Total Employees this location ______ ______

SECTION VIII - EXPENDITURES

1. How do you normally budget for administrative expenses?
   - ____percentage of gross sales ( )
   - last year's personnel and consumable costs plus allowance for inflation ( )
   - treat new office equipment as capital investment and handle on individual basis ( )
   - no separate location budget; included in corporate budget ( )
   - other (describe)______ ( )

2. How large an expense could you consider for improvements in any one year, assuming benefits justify the expenditure?

Less than $100/monthly	( )	$1001 - $2000/monthly	( )
$100 - $250/monthly	( )	$2001 - $3500/monthly	( )
$251 - $500/monthly	( )	$3500 - $5000/monthly	( )
$501 - $1000/monthly	( )	More than $5000/monthly	( )

3. Do you have a separate budget for communications?____ If so, how much is it? $__________/year. How is it determined?
______

4. Do you have a separate budget for data processing?____ If so, how much is it? $__________/year. How is it determined?

5. Do you have a separate budget for office equipment? ____ If so, how much is it? $____________/year. How is it determined?

____

6. Do you have a separate budget for office supplies? ____ if so, how much is it? $____________/year. How is it determined?

____

ALL INFORMATION IN THIS QUESTIONNAIRE WILL BE KEPT STRICTLY CONFIDENTIAL AND USED FOR STATISTICAL PURPOSES ONLY.